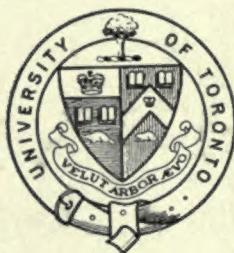


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AN ANTHROPOGEOGRAPHICAL STUDY  
OF THE  
ORIGIN OF  
THE ESKIMO CULTURE

BY

H. P. STEENSBY

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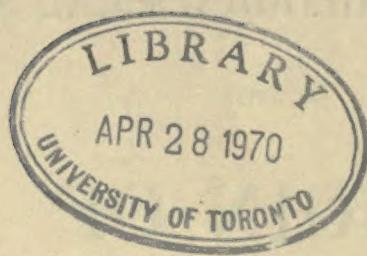
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## PREFACE

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IN this work, which I have called an Anthropogeographical Study, I have further carried out the scientific method and the considerations which I had already set forth in my preliminary paper on the subject "Om Eskimokulturens Oprindelse" which was published in Danish in 1905. The present work, however, must not be regarded as a mere translation of the named paper. The three introductory chapters have been revised, but their contents are otherwise mainly the same. As regards the following descriptions of the types of Eskimo culture, some of the chapters have been rewritten, and in regard to all the chapters I have as far as possible taken into consideration the results of the later expeditions and explorations. As regards the Polar Eskimo and the Greenlanders, I must in this connection mention my own observations and studies, made in the intervening time. The chapters following the description of types are, on the other hand, quite new, it having been possible for me to give a more elaborate argumentation for my results and to carry them somewhat further than I was able to do in 1905. Among the various things which have made this possible may be mentioned the important results brought home during the last 10 years by the Danish expeditions to the east and north coasts of Greenland, which have enriched our knowledge as regards an important and hitherto missing link in the chain of distribution of the Eskimo.

I wish to call attention to the fact that in citing authors I give only the name of the author and the Roman figures which in the Bibliography are prefixed to the titles of their works, when these number more than one. "Meddelelser om Grönland" is in most cases abbreviated to M. o. G.

*H. P. Steensby.*



## Introductory Sections.

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### The Eskimo Culture and Theories on its Origin.

THE Eskimo have never played a great rôle in the world's history, and it is scarcely likely that they ever will have the chance of doing so. Since early times their part in history has consisted only in the small, but dramatic, episode of the destruction of the Scandinavian Colonies in South Greenland.

Their later contact with the Europeans has been distinctly marked by peacefulness, and by the absolute impotency in a general martial and political sense, of this small population. On the other hand they have gained a certain respect from the Europeans with whom they established a connection, by producing a culture which has overcome the difficult conditions of subsistence in the Arctic North, and also, because, as regards certain dexterities, they really furnish an example of the utmost effort of human ability.

As regards popularity, the small, badly groomed, Eskimo have always been outshone by the Indians in their traditional form. Scientifically, also, a strong diversity has been conceived. As regards the purely physical appearance it seemed even to CRANZ that there was more similarity between Eskimo and Tunguses and Kalmucks than there was between Eskimo and Indians; and when RINK, in 1871, read a paper in the Anthropological Institute in London, where he maintained the American origin of the Eskimo, it was refuted by CHARNOCK, who emphasized the gulf between the Eskimo and the Northern Indians, in linguistic, physical and other respects.

In this way there are two continents in which the dispute as to the primeval home of the Eskimo is contested: America and Asia. The dispute is old, and can still be said to be far from being finally decided.

Along what paths the knowledge of the Eskimo has passed into European literature is witnessed in the name of the tribe itself. The term Eskimo (Esquimaux) is, so to say, the French form for an Algonquin word, which means something like "those who eat raw meat." The Frenchmen in Newfoundland and Canada heard it from the Abnakis who lived on the north side of the Gulf of St. Lawrence, in unceasing hostility to their Eskimo neighbours on the coast of Labrador;

but, by the Cree-Indians the name is also used for the Eskimo west of Hudson Bay. From French and English literature the name passed to all other languages.

Another name used for the Eskimo is *innuit* (plural of *inuk*, human being), which originates from the Eskimo themselves. In the middle ages, except in Scandinavia, there was little use for the old Scandinavian term *Skræling* (plural *Skrælinger*); nor did the term *Orarians*, or coast inhabitants, as proposed by DALL, become current.

The home of the Eskimo is the Arctic north coast of the American Continent and the Arctic Archipelago situated in front of it, together with the large island of Greenland. Consequently, they are what FR. RATZEL has designated a "border people," or a people which lives along one of the outer edges of the inhabited world.

Such a people is, as a rule, at a low stage of culture. In the literature on the subject the low cultural standpoint of the Eskimo is also frequently emphasized. And it cannot be denied that in certain directions, for instance as regards social organisation, the Eskimo display somewhat inferior development. But it is a question whether this inferior social differentiation is due to primitiveness, or whether it is not rather a result of the natural conditions under which the Eskimo have lived from time immemorial.

No deep knowledge of the Eskimo culture is needed to see that it is a culture which has been obliged to employ an immensely large part of its force simply to develop the means wherewith to gain a livelihood, or the mode of procedure by which each individual man or bread-winner may secure his own and his family's supply of food and clothes, and a dwelling — three things which are equally necessary in the polar regions.

When we take into consideration the high development reached by the Eskimo hunters as regards skill in the making of a livelihood we must, without doubt, rank Eskimo culture high within this class of culture — viz., hunting culture — to which it belongs in the system of historical culture. The special development of hunting ability in the way of enduring fatigue, suffering hardships, showing courage, and especially as regards the adroitness in the use of the implements, naturally results in the more individual qualities being specially brought under cultivation, while the more social side of the culture in question has, as a rule, been allowed to lag behind, or perhaps, in certain cases, may even be regarded as having fallen into decay compared with the more differentiated conditions of former times. These are all questions, however, which are not going to be investigated here.

The economic culture of the Eskimo has often awakened the admiration of travellers by the cleverness with which it is adapted to the natural conditions, and, considering they are a primitive people,

by the unusually large number of implements which are in use. It has been described so often, however, and is so well-known, that here only the principal forms of implements, articles for use, dwelling-houses, and lastly a few specially important hunting methods will be called to mind. Some other hunting methods of importance will be mentioned and described in the following chapters.

These are the kayak, umiak (woman's boat), harpoon, and bird-dart with throwing board, the three-pronged salmon-spear, the compound bow, strengthened by a backing of sinew, the dog sledge, the snow shoe, the winter house and snow house with the lamps for burning blubber oil, and the platform, the summer tent, and lastly the skin-garments. The nearer description of these various contrivances as adapted to one another must here be taken as known.

Among the various methods of hunting, the hunting of seals from a kayak is well known, while the Maupok method has been less noticed. The word "Maupok" signifies "he waits" and refers to the fact that the hunter stations himself at the hole which the seal keeps open in the ice during winter, and waits until the seal comes up to blow. The hunter stands motionless, or he sits upon a small three-legged stool, sometimes for hours, before the seal comes up to the breathing hole, when he instantly thrusts the harpoon into the animal, which disappears into the water as quick as lightening, pulling off the harpoon head and disengaging the detachable foreshaft. It soon gets exhausted, however, so that it can be hauled up and killed; the hole is then widened and the prey drawn up.

This method of hunting is practised throughout the winter. In the spring, on the other hand, the seal creeps up onto the ice to sun itself and is hunted as follows: the hunter lies down and, imitating the movements of a seal, approaches his prey. If he succeeds in getting within a convenient distance of the seal, he rushes up to it and thrusts the harpoon into it. The point is to be quick, as the seal never goes far from its hole in the ice, but lies ready to plunge into the water. This method of hunting is called the "Utok method" from the Greenland expression for a seal that has come up upon the ice to sun itself. Besides these, there are other methods of hunting which are connected with ice, and are of ethnographical importance. For the present, I shall only call to mind the hunting at cracks in the ice, which is carried on during the latter part of spring and early summer, when the ice begins to break up.

It has been said that scarcely anywhere else on earth does there exist a people living in groups scattered over so extensive an area which at the same time shows such remarkable homogeneity both in culture and language as the Eskimo do, and there can be no doubt as to the correctness of this. ✓

As regards culture, in particular, the congruity has been obvious

enough. With its characteristic skin-boats, its individual missile-weapons, and its whole coastal character, the Eskimo culture was easily distinguishable, whether met with in the most north-west parts of the Atlantic Ocean or the northernmost part of the Pacific: and its aloofness from that of the neighbouring folk is marked by an equally distinct stamp of individuality. As will be seen from the following description of types, there are, however, several cultural nuances within the Eskimo culture, and some of these present themselves under conditions which only an anthropogeographical treatment can satisfactorily explain.

As regards language the Eskimo are conspicuous among their surroundings by a similar stamp of individuality and a similar homogeneity. The philologist, G. KLEINSCHMIDT, pointed out that the languages in Greenland and Labrador were "less different than, for instance, Danish and Swedish or Dutch and Hamburg Low-German." It is to be regretted that no actual philologist has had occasion personally to compare the Eskimo languages in Greenland and Labrador with those spoken furthest west in Alaska, but there is sufficient evidence that the differences are not so great that the Eskimo from the easternmost regions would not quickly learn to understand those from the westernmost regions.

The Danish philologist, W. THALBITZER, who is one of those who have most recently treated these questions, writing about the languages from two places so far apart as the east coast of Greenland (Angmagssalik) and the Asiatic side of Bering Strait says "there exists a difference of dialect about equivalent to the difference between two related languages (like English and German). The transitions from dialect to dialect seem to take place on the whole steadily and gradually in the interjacent districts, . . .".<sup>1</sup> As regards the independence of the Eskimo language, he writes in the same place that it "constitutes an independent family of languages. No one has as yet succeeded in finding any language either in Asia or among the American Indians which might possibly have been originally related to it."

In this connection, however, it should be remarked even here that there are two peoples which, while culturally exhibiting the Eskimo characteristics, differ linguistically. They are the so-called coast Chukches in northern Asia (who should not be confused with the Asiatic Eskimo). These coast Chukches speak Chukche, and are a branch of the Chukches, but have adopted the Eskimo economic culture. Then there are the Aleuts, called after the islands on which they live, or, strictly speaking, the original inhabitants of the Aleutian Islands, who live in the same way as their neighbours, the Eskimo of South Alaska, but who, linguistically, are decidedly apart from them.

<sup>1</sup> M. o. G., Vol. 31, p. 45.

It is evident that such congruities both in culture and language over such an extensive area can only be the result of a comparatively late dissemination from a more limited area. To find out this limited area by studying the various nuances of the economic culture is the main object of this work. The easternmost point where individuals possessing Eskimo culture have been met with is the east coast of Greenland situated about  $20^{\circ}$  W. long., and the westernmost is the Siberian Tschaunbay situated about  $170^{\circ}$  E. long. The southernmost limit to which the Eskimo wandered — at any rate during the later centuries — was the Strait of Belle Isle, situated  $51^{\circ}$  N. lat., and the northernmost Robeson Channel and Danmarks-Fjord in northernmost Greenland, situated  $82^{\circ}$ — $83^{\circ}$  N. lat. Consequently, the dissemination extends over 30 degrees of latitude, and over half of the entire circumference of the earth in the southern part of the North Polar Zone.

RINK has computed the distance from the southernmost point of the Eskimo range in Alaska to the most south-eastern point in Labrador to be 10—11,000 kilometres along the coast, which the Eskimo follow. And the distance from Labrador to the east coast of Greenland, which indicates the third corner of the angle in the great triangular area of distribution, the two other corners being South Alaska and Labrador, to be just as great. In comparison with these enormous distances over which the Eskimo are distributed, the area of their lands is relatively small, as they usually inhabit the coasts only, while the interior of the countries is, as a rule, either destitute of population or occupied by other tribes.

Apart from the Aleuts and the coast Chukches the Eskimo are frequently divided into a western and an eastern section, WAITZ set the boundary between these sections at the mouth of the Mackenzie. RINK shifted the point of demarcation to the somewhat more easterly situated Cape Bathurst ( $127^{\circ}$  W. long.), which is now that generally adopted. But this boundary is not really a fortunate one either, as the same tribe wanders about on both sides of this headland. The now uninhabited stretch of coast between Darnley Bay and Dolphin and Union Strait, or approximately between  $124^{\circ}$  and  $116^{\circ}$  W. long., must be regarded as a better boundary. But in reality the distinction between West and East Eskimo is quite artificial, or practically of a geographical nature. A boundary of any great importance does not exist at the place in question, a fact which, especially lately, has been proved by STEFANSSON's observations.

BOAS<sup>1</sup> has shown how there are connecting routes between the eastern groups of Eskimo, which, though not regularly used, yet probably, at some time within living memory, have given occasion

<sup>1</sup> BOAS, I, p. 89.

for connection between the groups or tribes. This link extends from Baffin Land to the Melville Peninsula, from Rae Isthmus to the Boothia Isthmus, and from Simpson Strait to Coronation Gulf. A conflux exactly corresponding and at least as well developed took place among the West Eskimo. Not only was there a lively connection across Bering Strait, but from here the trading route went southwards to Norton Sound, and also northwards along coasts and rivers to the Arctic Ocean, and further towards the east to the Mackenzie Eskimo. When, from the south, the English travellers came to these, they found them in possession of articles of Russian manufacture, which the Eskimo said they had obtained along the trading route mentioned above. On the other hand, no such commodities were found at Coronation Gulf; but this only serves to show that the Eskimo here lived more out of the beaten track, just as it reminds us that their trading connection ultimately took the direction of Hudson Bay.

For practical reasons it is usual to divide the Eskimo into Greenlanders, Labradors, Central Eskimo (by which is understood the East Eskimo in the Arctic Archipelago and on the coast of the adjacent mainland), Mackenzie Eskimo, the Eskimo in Alaska and in Asia, and, lastly, Aleuts.

This division is, however, not of great importance as regards their culture, historically. On the other hand, it is of importance in anthropogeographical respects in order to distinguish between Arctic and Subarctic, as the Eskimo inhabit both distinctly Arctic regions and tracts of coast with a cold-temperate coast climate. The Greenlanders south of Holsteinsborg and the inhabitants of Alaska south of the Yukon Delta are reckoned as being distinctly Subarctic. The related conditions in climate and the nature of the ocean in and near South Greenland and South Alaska effect a predominance of certain fixed features in the conditions of culture, so that it is fully justifiable to talk of a Subarctic form of Eskimo culture in contradistinction to the Arctic form in the more decidedly Arctic regions.

The total number of individuals of the whole tribe was estimated by RINK to amount in 1887 to 31—32,000 souls. Of this number, one third or about 10,000 fell to Greenland, about 4,000 to the Archipelago, some 2,000 to Labrador, and he assigned a similar number to Mackenzie and to Asia, and, lastly, fully 11,000 to Alaska. Of these numbers, that given for Alaska is evidently wrong. In 1880 the U. S. A. instituted a thorough census, with the result that there were 17,617 Eskimo in Alaska besides 2,143 Aleuts. In further conformity with this, KURT HASSERT in 1891 estimated the total number of Eskimo at about 40,000; a number which must be assumed still to have approximate validity.

A complete description of the history of the discovery of the

Eskimo will not be given. Here the intention is only shortly to point out how it is the Eskimo culture in its Subarctic condition which first became known and described, and ever today holds good as being the typical one, both when scientific treatment and the derivation of its relationship are in question.

From the days of Eric the Red till about 1400 the Scandinavian Greenlanders were to a certain extent in touch with the Eskimo, to which the Saga reports bear witness. Vinland travellers met people who decidedly must have been Eskimo; the interesting question whether they also came into contact with the Indians will not be entered upon here. From 1400 till the beginning of the 18th century sailing-expeditions from time to time came across polar peoples, and even seized whole families, whom they carried back to Europe, where they caused a certain sensation.

It was, however, neither the Sagas nor the later reports of the travellers JOHN DAVIS and MARTIN FROBISHER which laid the foundation of the modern conception of the Eskimo.

Not until 1719 did the Dutch, and, somewhat later, the English, begin to engage in regular whale-hunting in Davis Strait or the west coast of Greenland as far as Disco. If matters had been allowed to run their own course here, as formerly in Labrador, where the natives and the hunters carried on a mutual war of extermination<sup>1</sup>, there is hardly any doubt that history would have repeated itself; happily this did not happen. In 1721 HANS EGEDE's mission began, and the sensible measures which resulted therefrom permitted the Eskimo economic culture to thrive in peace, while at the same time the people became possessed of those benefits of European culture which were suited to them.

Several Danes who then spent a great part of their lives in Greenland were men of high culture; they described the people with, for that time, exceptional thoroughness and perspicuity, so that the Greenland and especially the South Greenland Subarctic form of Eskimo culture was in the literature established as the type of the Arctic mode of living.

These authors were HANS and POVL EGEDE, missionaries; OTTO FABRICIUS, clergyman; and DAVID CRANZ, Moravian Brother. A more vivid and impressive description of the Eskimo spirituality than that which POVL EGEDE has given in his "Reports on Greenland" must be searched for, and a better ethnographical account of the Eskimo implements and their use than that given by FABRICIUS is hardly to be found even today. Finally, DAVID CRANZ, in his "History of Greenland" written in German, has contributed to make the Eskimo and their individual culture known to the world at large.

<sup>1</sup> CARTWRIGHT, pp. 1 sqq.

For all later travellers and portayers of Eskimo culture the representation of the Danish Eskimo was the starting point, and naturally their first endeavour was to find conformity with these, and to point out the cultural unity of the Eskimo. CRANZ proved that the Labradors were of the same people as the Greenlanders, and at the same time drew attention to the quite corresponding descriptions given by Russian travellers of the inhabitants of Bering Strait, which even in 1618 had been navigated by DESCHNEV, and again in 1728 by BERING.

From 1734, after BERING's last journey, a large number of Russian adventurers whose only object was to turn to account the wealth in furs, streamed to the Aleutian Islands and the nearer American Islands south of Alaska. With great daring these, to a great extent, un-nautical people undertook the sea-route from Ochotsk to Kadjak, the geographical position of which they were incapable of reckoning. In order to get the islands charted, and navigation set in order, the Russian government, after 1764, frequently sent out Naval officers, whose reports, however, got no further than the government offices in Petrograd. By degrees the Russian discoveries extended along the coasts of Norton and Kotzebue Sounds, and certain expeditions went to the interior of Alaska. Besides their activity on the Aleutian Islands and in Kadjak, which in 1798 became the seat of "the United Russian-American Co.," the Russians founded the more northern trading station St. Michael in Norton Sound; but the literature had all the while to be content with the rough descriptions given by individual mariners like COOK and LANGSDORFF.

Not until towards the middle of the 19th century did more explicit accounts about the inhabitants of the Alaskan coast and the Aleutian Islands begin to arrive. VENJAMINOV, to whom WRANGEL gave the honourable title of "the second Egede," worked during 1824—38, but at that time the Aleuts and the Eskimo had already been for a hundred years under destructive influence, and much of their individuality had been lost. In 1839 WRANGEL's account of the colonial conditions in Russian America was published. In 1852 the hydrographic department of the Russian Admiralty communicated important extracts from LEVASCHEV's diary for 1764—69, and at the same time ERMAN's Archive brought the most important parts of other older reports of travels.

In this manner ethnographical authors like HOLMBERG and DALL got the necessary material for their studies and descriptions of the Eskimo culture furthest west. The first result was the establishment of the similarity of the culture in question to the well-known South Greenland Eskimo culture. The same skill in the handling of the water-craft, and the same kinds of implements and hunting methods being found in Greenland as in South Alaska. On the strength of

these similarities one without further ado established the cultural unity of all Eskimo groups in the Subarctic form of culture, inasmuch as the extremes were known and not much heed was paid to the interjacent Arctic districts, where it was taken for granted that the same culture would be found in a poorer and more straitened form.

One started with the understanding that the Eskimo were typical inhabitants of the coast, who in a pronounced degree sought their living on the open sea, and, for the rest, this has been the prevailing conception until the present day. One of the objects of this work is, however, to show that this conception is greatly deficient and one-sided: the cultural conditions with the Arctic Eskimo tribes must be elicited for further elucidation.

Of all problems, that of the origin of the Eskimo culture cannot be solved without paying necessary regard to the Eskimo culture in its purely Arctic form.

Hitherto, most of the investigations in the origin of the Eskimo culture have rather aimed at finding out the descent and relationship of the Eskimo population proper, inasmuch as one has relied on conditions of race or on the linguistic conditions, or on some cultural feature bearing a distinct stamp, as, for instance, the kayak, throwing-board, etc. It has been taken for granted that a proving of the descent of the population also explained the origin of its culture, which is, however, by no means the case.

It has been directly inviting to start with the race-type, as the Mongolian race-type is so unmistakably present amongst the Eskimo. To deduce, without more ado, an Asiatic origin from this fact will not however be possible, as the Mongol-type is not decidedly predominant amongst the Eskimo; certain groups, namely in the central districts, remind us much more of the Indians than of the Mongols. Finally, beside with the Eskimo the Mongol-type occurs also with Indian inhabitants in the North-western parts of North America. This distribution seems, then, to speak mostly in favour of the Mongol-type having at a secondary stage, come to North America, and having been spread in some way or another, either by joint immigration or by infusion of small driblets.

Nor has a consideration of the linguistic conditions given any standpoint for deciding how the Eskimo came about, because, as already mentioned, the Eskimo language stands isolated. Some have maintained that this Eskimo family of languages, according to its structure, must be placed together with the American family of languages, or go into a larger group together with these. This was the view even of PRICHARD and GALLATIN, and later RINK, D. G. BRINTON and several others. Some, on the other hand, separated the family of languages from North America and associated it with North-east Asia, inasmuch as they have placed it together with the language

of the Palæasiatic in the so-called hyperborean group; this applies especially to language systematists like FRIEDERICH MÜLLER and F. N. FINCK.

That the cultural development of a tribe must be kept sharply distinct from its linguistic history and from its anthropological career has not always, or more correctly has seldom, been realized. These widely different matters have frequently been inquired into as one, without distinguishing between them, and on the whole no end of theories as to the descent of the Eskimo have arisen. Attempts have been made to locate the place of their origin in no less than three continents.

The views as to their origin may conveniently be divided into three groups. ① The first connects the Eskimo with the palæolithic tribes in Europe or America during and after the glacial period. ② The second makes them descend from Asia, and endeavours to explain their appearance in the Arctic regions in connection with historical events amongst the Mongols. ③ Finally, to the last group, fall all the attempts to solve the problem by absorption in the ethnographical conditions.

The foundation for the assumption that the Eskimo descend from the palæolithic inhabitants of Europe is the discoveries made in the river-basins and caves of Northern France of bone implements, which call to mind Eskimo fish-spear-heads of bone, together with carved bone figures of reindeer for example, which likewise resemble Eskimo carvings. Special stress has been laid on the finding of indubitable harpoon-heads of bone; but in consequence of this, attention must be drawn to the fact that the counterparts of the appurtenances of bone spigots and peculiar heads of the essential Eskimo harpoon have never been found. The discovered heads of bone with barbs on one side or on both sides are made according to a principle to be met with all over the world. It is only because the material is a common one that they resemble the Eskimo heads in particular. To the account of the material and the related natural conditions and experiences must be written down the other similarities which it was thought would be found between palæolithic remains and Eskimo articles. Eagerness to find congruities has gone so far that it has led to a wish to find spiritual relationship between the Eskimo and palæolithic Western Europeans, in that it has been thought possible to substantiate that they both evince the same remissness towards the dead. Naturally this is a step forward amongst the vague conclusions. For geographical reasons alone, this theory seems to present itself as an impossibility, which has also been proved; but, nevertheless, it on and off appears on the surface.

The idea that the Eskimo are direct immigrants from Asia

cropped up at a very early date. Even DAVIS<sup>1</sup> touches on it, and today it finds advocates. The fundamental reason for this is, besides general impression, partly an ingrained mistrust in America being a domain productive of culture, and partly the conceptions of the independence of the Eskimo and their culture as opposed to the other North Americans. Added to this is, that so long as the enigma of the descent of the Eskimo stood side by side with numerous other Arctic mysteries, undreamed of possibilities of a suitable route of immigration could be hoped for. So long as the theory of an open sea round the Pole, or the presence of Polinians, had a warm advocate in such an authority as PETERMANN, it is not strange that no one dared deny the possibility of some day coming across groups of Eskimo, or new travelling tracks, in the polar regions not yet explored. C. R. MARKHAM<sup>2</sup>, in a lecture delivered in the Royal Geographical Society in London 1865, encouraged Polar expeditions on the strength of there being a possibility at every Polinia of meeting human beings who live on seal and walrus-hunting. As regards the possibility of the existence of Polinians, he referred to PETERMANN.

In the meantime knowledge about the Arctic lands increased, and since FRITHIOF NANSEN, with ingenious eye and energy, has set foot upon the two most obscure regions, the Arctic Ocean and the inland ice of Greenland, and thrown conclusive light on both, the mysticism which was associated with the Arctic anthropogeography has vanished, and calm investigation can prevail.

The first to form a complete theory on the emigration of the Eskimo from Asia was CRANZ<sup>3</sup>, who, taking it for granted that not until the 14th Century did the Eskimo immigrate to Greenland, from this draws the conclusion that their arrival in the Arctic region is, on the whole, of very late date. As, next, he thinks to have found physical and linguistic relationship with the Kalmucs in Asia, he assumes the Eskimo to be a branch of this tribe, which, during political disturbances in Tartary before the birth of Christ, has separated and wandered North-east across Bering Strait to America.

A hundred years later this theory gained renewed honour and dignity through MARKHAM's adoption and fashioning of it. As mentioned above, he shared PETERMANN's belief in the "Polinians," and the discovery of the Smith Sound Eskimo seemed to him to promise the possibility of new discoveries of unknown tribes. Then came the discovery by the English North-west Expedition of numerous, but certainly deserted, settlements on the southern coasts of the Parry Islands, and here it was striking that none was found on the opposite

<sup>1</sup> DAVIS, p. 18.

<sup>2</sup> MARKHAM, I, pp. 87—99.

<sup>3</sup> CRANZ, pp. 333 sqq.

coasts on the south side of the series of sounds which extend from Lancaster Sound to Banks Strait<sup>1</sup>. The English naval officers who navigated Lancaster Sound and its continuation started with the belief that the southern side must be at least as suitable as the northern side, and many of them, like SHERARD OSBORN, concluded that the dispersion of the deserted settlements indicated an immigration from the west along a route which lay several degrees more to the north than the north coast of America. OSBORN imagined the district round Cape Schelagskoj (about 170° E. long.,) on the north coast of Siberia to be the point of their departure, and supported this, amongst other things, with a Chukche legend reported by WRANGEL about a people which had gone northward to an unknown land. Across unknown groups of islands this people was said to have reached far north, where a deep and never navigated ocean causes a milder climate and, with it, conditions for more affluent existence<sup>2</sup>. From the northern station they followed the southern side of the Parry Archipelago to Smith Sound and Greenland without, however, getting any knowledge of their kinsmen on the north coast of the mainland, who, like another stream of emigrants, are thought to have likewise started from Asia along the north coast of America parallel with the more northern stream.

This theory obtained an ardent promulgator in C. R. MARKHAM, who supplemented it with CRANZ's old idea that the Eskimo migrations should be attributed to political disturbances in Central Asia. He imagined the Eskimo as originally living from Cape Schelagskoj to Bering Strait, whence, it was supposed, they had been ousted by pressure from the south along the two mentioned routes. He gets at his date by comparing the year 1349, which he supposes to be the year for the immigration to Greenland, with the Mongolian wars of conquest in Asia. During the centuries which preceded their first known appearance in Greenland, there was great unrest among the people of Central Asia. TOGSUL BEG (c. 1050), DSCHENGISCHAN († 1227) and other lesser chiefs led forth large armies bent on conquest. The pressure exerted by these penetrating waves on the tribes of North Siberia drove them further towards the north, and this led to the forced emigration of several tribes. The ruins of houses on Cape Schelagskoj indicate the beginning of the long wandering<sup>3</sup>.

This theory considered spontaneously may be enticing. In other respects it was soon thoroughly confuted by W. H. DALL<sup>4</sup>, who was a supporter of RINK's hypothesis. As a matter of fact it has played an important rôle, and may yet crop up again, either in full or in

<sup>1</sup> cf. the maps by BOAS, IX and MARKHAM, I, p. 87.

<sup>2</sup> OSBORN, I, p. 260.

<sup>3</sup> C. R. MARKHAM, I and II.

<sup>4</sup> DALL, VI.

part. Thus, K. HASSELT considers it probable that the Eskimo "in rapid flight have hurried through, and not again set foot on," the Parry Archipelago. E. ASTRUP furnishes us with a new variation, as he is of opinion that the Eskimo from Siberia have crossed the New Siberia Islands and numerous presumed groups of islands to North Greenland and Smith Sound. Quite recently W. THALBITZER<sup>1</sup> has again referred to MARKHAM's theory in support of his own view that the Eskimo once lived west of Bering Strait, and from there have wandered towards the coast.

Herewith we leave this theory, which obtained its greatest importance by having such a famous exponent as C. R. MARKHAM. In the following pages an account will be given of what one hitherto has thought it possible to conclude about the origin from ethnographical facts. He who did the first, and even to day, most important work in this domain was H. RINK. After having pointed out, as mentioned above, that the Eskimo culture must have one and the same origin, independently of the home of the race, RINK sets up two general maxims before establishing any proof as to where the home of the culture may have been situated.

He starts at once with the idea that the culture has originated under similar climatic conditions and under the same distribution of land and sea as nowadays, and he nextly assumes that the Eskimo wanderings from the south have taken place through the interior of the country outwards to the coast, along rivers, and not from a more southern stretch of coast to a more northern one. RINK has, as will appear later, come to a right conclusion in his last mentioned remark, and this conclusion is founded on the fact that the tribe's enjoyment of economic culture "with the settling on the Polar coasts must have undergone a change which was rather abrupt and also must be supposed to have extended to the entire tribe, and therefore that the people did not live scattered as they do now, but so united that a certain cohesion, and the necessary intercourse, could take place. But this is not consistent with a wandering along the coast which more or less suggests the idea of a successive line of advances."

RINK is undoubtedly right, also, in assuming that the geographical conditions have not greatly changed since the Eskimo culture was fashioned. Geologically it may be concluded that this must have taken place during the latest geological period, or after the glacial period<sup>2</sup>. The linguistic homogeneity is evidence of a comparatively recent dispersion, and the purely historical fact that the distribution over the west coast of Greenland was not accomplished till from the 11th to the 14th centuries is perhaps also to be understood as a proof that it is comparatively young. When one compares the

<sup>1</sup> M. o. G., Vol. 39, p. 717 and same page, note 1.

<sup>2</sup> cf. A. HAMBERG.

rapidity with which cultural development and racial propagation can take place with the many times slower speed with which alterations occur in the earth's history, one may surely draw the conclusion that great alterations cannot have taken place in the climatic or geographical conditions since the days when the Eskimo began their migrations, and any eventual, periodical oscillation of some metres in the level of the land or of some degrees in temperature would play no encroaching rôle.

According to RINK, the Eskimo originally were an inland people, and lived by fishing in the rivers, and he founds his opinion on LEWIS H. MORGAN's comments on the mode of living of the primitive Americans. For the rest, this author regarded the Eskimo as having immigrated from Asia. RINK next imagines that either by expulsion or a general shifting from the interior the Eskimo were forced out to the sea-coast, where, in accord with their former custom, they supported life by fishing and hunting, until, little by little, the peculiar Eskimo culture fashioned itself. Not until it had adjusted itself to conditions of life at the coast did a tribe begin to disperse along the Arctic coasts.

Per se, RINK considers that this development into inhabitants of the coasts at the mouth of a river might just as well happen in Asia, where there also are rivers which abound in fish and debouch into the Arctic Ocean, as in America; but on account of the shape of the head, the language, the legends and various cultural conditions of the Eskimo, he was convinced, however, that it had happened in America.

RINK was inclined to favour the idea of expulsion from the interior by a hostile tribe, as he could not otherwise explain what could induce the Eskimo to undertake such a radical change in their culture, which can only be thought of as being carried into effect by cultural supplies from without, or by the influence of changed natural surroundings. As the first possibility, in this case, is quite inconceivable, one must fall back on the latter, and it must have been a powerful and encroaching alteration which took place, since it has been able to compel a slow and primitive people like the Eskimo, itself to transform its culture so thoroughly in all directions. "When one considers the often mentioned stagnation, or extremely slight change in the conditions of culture, which the Eskimo have been subjected to during the period of about 1000 years since the Europeans have begun to know of them, it is obvious that quite special circumstances must have egged them on to activity at the time when they trained themselves to be what they now are."<sup>1</sup> RINK believed, however, that when he got the Eskimo chased away to the mouth of

<sup>1</sup> RINK, IV, p. 219.

a river and held there by the pressure of hostile tribes he had the forces which were to foster the new culture set aight. His first and most important claim to this belief was his view that the kayak was the kernel of the Eskimo culture in implements, or that, which by its making led to the invention which had by degrees to drag all the others after it. RINK supposed the primitive form of the kayak to have been an Indian birch-bark canoe. The first step towards the Eskimo culture, therefore, consisted only in replacing the birch-bark with sealskin, and at the same time in providing the skin-boat with a deck, in order to protect it against the waves of the sea. In this view RINK did not consider that so many other primitive peoples have used small boats on the sea without covering them, from which one may conclude that, with the advent of the kayak, there were other factors which asserted themselves. RINK was, however, so convinced of the sole validity of the South Greenland or Subarctic form of culture that he started by understanding that, where he found this form in its simplest and apparently most primitive stage, there the place of origin must be. And then he thought, just at a place which fitted in excellently with the rest of his reflections, namely round the mouth of the Yukon in Alaska, to find Eskimo who rowed the kayak with a single-bladed paddle, and did not use the water-proof pelt for kayaking. Here, then, he placed the hearth of the Eskimo culture, and thought to be able to point to a steady development from here to South Greenland, where he believed that the culture reached its culminating point. He tried in several particulars to prove this succession of development. Full confidence in the use of the kayak could only have been attained in Greenland. The double-bladed paddle first appeared around Point Barrow. In South Alaska the bladder-dart was used for seal-hunting, and it was only further north that the idea of separating the bladder from the dart and joining these two with a cord had been thought of. The harpoon first attained its most ingenious form in Greenland. In South Alaska the houses had the same form and arrangements as the Indian ones, and further to the north appeared, by degrees, houses with special Eskimo accomodations and blubber-lamp instead of the hearth. In Alaska the Eskimo still wear lip-ornaments, but when they migrated northward to the Arctic regions they had to discard this adornment on account of climatic conditions. Also in apparel, skill in craftsmanship, and social conditions an apparent development is affected from Alaska to Greenland<sup>1</sup>, and RINK thought, besides, to find support for his views in the contents and distribution of various legends.

In the various works where RINK treated the subject of the Eskimo he cleared the way by his sound reflections for the calm

<sup>1</sup> RINK, VIII, pp. 6 sqq.

study of the Eskimo culture and its origin, and by his own theory as to the origin, which was supported by multifarious arguments, he dragged the question down to earth, and established America as being its home, and pointed out the way which further investigations must follow. Since the publication of his important work "Eskimo Tribes," his theory has held a strong position in the scientific world, in spite of the criticism which has been directed against it, especially by MURDOCH. Meanwhile it is not difficult to substantiate that RINK's line of argument is wrong, and MURDOCH<sup>1</sup> showed, also, how RINK was mistaken in pointing to a succession of developments from Yukon to Greenland. Neither with respect to the structure and use of the kayak, the distribution of the paddle and bladder-dart, nor the gradual alteration in the form of the houses did RINK's assertions accord with reality. The use of lip ornaments had not been discarded northwards on account of the frost, as they have been found right up to Cape Bathurst, where the use of them stopped, owing, in MURDOCH's opinion, to lack of connection with the East Eskimo. RINK has quite overlooked the fact that immediately south and north of the Yukon Delta are found kayaks which are just as well built as amongst the South Greenlanders, and are rowed with a double-bladed paddle with just as great dexterity. That there is no regular succession in house-building I have elsewhere had opportunity to point out<sup>2</sup>.

In spite of these various errors, there are some who think that RINK may, nevertheless, be right in the main, and that Alaska is, all the same, the home of the Eskimo culture. The rest of the Eskimo inhabited coasts, on account of the poverty-stricken Arctic nature are of so barren a character that many people involuntarily think that Alaska with its somewhat richer resources and its more varied population, where it is easy to think of shiftings taking place, must be the natural source of origin. And that, since the original source of the culture is laid there, it may finally be assumed (as BAHNSEN<sup>3</sup> assumes) that the main tribe of the Eskimo has gone along the coast of the mainland, while a branch has spread itself over the Aleutian Islands. Linguistically, the Aleuts are, if any thing, co-ordinate with the Eskimo, and their Eskimo culture is, as I shall try to prove further on, only a loan from their neighbours.

Of the arguments advanced by RINK in favour of his theory, there yet remains to be mentioned that by which he sought to support it along the paths of folk-lore, taking it for granted that the Greenland legends containing historic matter had not arisen in the course of time, but at a definite period, which must, as nearly as possible,

<sup>1</sup> MURDOCH, II.

<sup>2</sup> *Eskimokulturen*, 1905 and M. o. G., Vol. 34.

<sup>3</sup> BAHNSEN, Vol. I, p. 228.

correspond with that in which all the rest of the changes in the condition of culture took place. After having proved, then, how the Indians, and even certain tribes, play a rôle in many Greenland legends, which he regards as being just as old as the migrations along the north coast of America, he apprehends this as proof of his theory regarding the migrations of the Eskimo. There is, however, much to be said against this view. The presence in Greenland of the legends in question can just as well be explained by their having strayed at a late date, and by verbal communication, from group to group. Nor is such immense age as RINK assumes, which has to be reckoned in centuries, compatible with tribes having such inferior social stability and differentiation. But, for the rest, it is a side of the question which lies apart from the present task, and, therefore, will not be discussed further.

Here, on the other hand, it has to be stated that the well-known American ethnologist, F. BOAS<sup>1</sup>, like RINK, has tried by the employment of legends and linguistic material to determine the reciprocal connection and original travelling tracks of the Eskimo groups. Along these lines he follows up the intercourse between the individual groups within the East and the West Eskimo. Thus, the Eskimo term for "white man" is the same with all the East Eskimo, and BOAS thinks that he is able to connect the origin of this term with a legend which was generally disseminated before the Eskimo became acquainted with the Europeans. As regards the Eskimo migrations, he also assumes that the question could be solved by a complete study of the language and traditions. "From the facts already known we arrive at the conclusion that the more ancient forms of customs and traditions are found west of Baffin Bay. In this way we are led to conclude further that the Eskimo migrated by way of Baffin Land to Greenland and Labrador. The natives of Labrador and of the south coast of Baffin Land believe that the events told in their traditions occurred in the far north. Those of Fury and Hecla Strait point south and southwest to the American continent. The Western Eskimo refer to the east as the place where their heroes performed their exploits. Therefore, it seems probable that the lake region west of Hudson Bay was the home of the Eskimo. We find their remains in the most northern parts of the Smith Sound region. At the present time the East Greenlanders and the West Greenlanders are very different from each other. Therefore the probability is that the immigrants separated in Smith Sound, and that one part went south while the other turned north-east, and thus reached the east coast. A decision of these questions must be postponed until the ethnology of the Eskimo is more thoroughly studied." Yet it is interesting to note that BOAS here indicates quite

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<sup>1</sup> BOAS, III.

a new direction as the point of origin for the Eskimo. His showing that the legends with the two groups of Eskimo point inwards towards the centre is a very important matter.

After contemplating the conditions of culture, MURDOCH<sup>1</sup> has formed a theory as to the descent of the Eskimo, which agrees with the result of BOAS's investigations. After having carried through his criticism of RINK, whereby he shows that from a cultural point of view there is nothing which speaks in favour of Alaska as the native land, Murdoch formulates his hypothesis, which, he says, is probably quite as correct as RINK's. It is his opinion that the central tribes and not the Yukon Eskimo possess the most primitive culture, and therefore they are nearest to the original home of the race, which was not the interior of Alaska but the district south of Hudson Bay. Here a part has separated, and streamed into Labrador and populated it, while the main body has gone northwards along the west coast of Hudson Bay to take possession of the Arctic Archipelago, and finally to reach Greenland via Smith Sound, leaving as a trace of their wanderings the house-ruins and other relics which are now found far north of where the Eskimo are at present stationed on the western side of Baffin Bay. From the original home — evidently before the Labradors separated — another large section went northwards along lakes and rivers, always keeping to the east of the Rocky Mountains, until they could pass westwards along the Yukon basin. Here they again divided, one section going down the Mackenzie in order to disperse towards the west as far as Bering Strait and Asia, while the other section went down the Yukon and the Kuskoquim and dispersed along the coast; where, towards the south, it became more and more changed on account of the new and peculiar surroundings. It will be seen that, according to this view, the people in South Alaska are not primitive, but highly specialized, Eskimo, who have brought with them to a relatively fertile and temperate district accomplishments which germinated under widely different circumstances.

What is interesting in these remarks of MURDOCH is that he, like BOAS, locates the primitiveness in the central districts. While RINK, for whom Eskimo culture was the Subarctic sea-coast form, only counted on the central Arctic districts as the necessary complementary and connecting link between east and west, MURDOCH, in consequence of his long stay at Point Barrow, had his attention directed to just the Arctic Eskimo groups. His hypothesis as to their migrations, itself, is not so satisfying, however, in comparison with BOAS's and RINK's calm and penetrating understanding of the shifting of peoples, in that MURDOCH is rather too free in his chapters on the treatment of the wanderings of the ancient Eskimo.

<sup>1</sup> MURDOCH, II.

Several other authors who have touched upon the question of the origin of the Eskimo culture have either concurred with one or another of the mentioned theories, or have expressed themselves from a special point of view.

In order to throw further light on the Eskimo constituting a link in the whole North American body of people, G. HOLM has collected several congruities in legends and implements with Greenlanders, Aztecs and Mayas. He chose to search far from the border districts, just in order to disarm the assertion that the congruities might be due to the contact of the peoples. The congruities in the use of the throwing-board, missiles, and salmon-spear, which HOLM points to, are certainly common to all North Americans, and can only be apprehended as a good argument to prove how deeply Eskimo culture is rooted in America, and it is conceivable that the same holds good as regards some of the principles of the legends.

WALTER HOUGH, starting with the idea that Eskimo life is dependent on the blubber-lamp, investigated the conditions pertaining to the origin of this, and through this tried to decide where the hearth of the culture was, whereby he came to the conclusion that it must have generated on an Arctic coast.

D. G. BRINTON<sup>1</sup> thought that the question of the origin of the Eskimo should date back to a time when climatic conditions were different. They then lived on the Atlantic coast, as far south as Delaware River. "It is not improbable that their ancestors lived on the swamps of New England, when the reindeer grazed there, and accompanied this animal when it finally strayed northwards. They pertain historically and characteristically to the Atlantic people." By this BRINTON means that they rank with the Iroquois, Algonquins, Beothuks, and Tinne people. And it is on the basis of this consideration that he gives preference to the hypothesis of his countryman, JOHN MURDOCH, and maintains that the regions south of Hudson Bay are the point of origin for the Eskimo.

Of additional importance as regards the question of the origin of the Eskimo culture are F. BOAS's publications of the results and investigations of the Jesup Expedition. These investigations, and especially the mythological ones, confirm the above-mentioned view of BOAS that the western Eskimo have come from the east and have cut an old communication across Bering Strait. As JOCHELSON expressed it: "There is no doubt that the Eskimo appeared on the American-Asiatic coasts of Bering Sea as an entering wedge which split apart the trunk of the common mythological tree."

In his latest great work "The Ammassalik Eskimo" THALBITZER (p. 917) expresses the opinion that "the common Eskimo Mother-

<sup>1</sup> BRINTON, I, pp. 59 sqq.

group has at one time lived to the west of Bering Strait and has arrived here from the coasts of Siberia." I must take it for granted that THALBITZER means the north coast of Siberia. But, as will be seen from the following, I cannot follow him as regards this point. I do not doubt that it will ultimately be proved that the Eskimo originally came to the regions around Bering Strait from the north-east, along the north coast of Alaska.

Even here, however, I can refer to my preliminary paper of 1905 on this subject, where I tried to show that all anthropogeographical circumstances favour the belief that the Arctic Archipelago of North America is the original home of the Eskimo culture. I pointed out Coronation Bay, in particular, as a district especially adapted to develop such a peculiar economic culture as that of the Eskimo. In the years which have since passed no weighty evidence has been produced to question the main points in my paper from 1905, viz., that the Eskimo culture is of Arctic origin and arose as an adaptation to the natural conditions in the Archipelago. Even the remarks set forth by A. HAMBERG have not great interest in this connection, as this author, in his paper, has not entered on the problem which I had treated, viz., the adaptability of the Eskimo culture to the geographical surroundings.

### Views of Investigations Before Us.

If one wishes to arrange the Eskimo in a cultural order of succession, and amongst the hunting peoples distinguish between the lower and higher hunters, one must necessarily place the Eskimo in the latter category.

No doubt there are many authors who rank the Eskimo amongst the lower hunting peoples, but these authors have not realized how rich and highly differentiated is the Eskimo inventory of expedients for the support of life. From the point of view of social and higher culture the Eskimo have only had opportunity for poor development. Owing to the difficult conditions of nature all their efforts are expended on procuring food, house, and clothes — three things which are all equally necessary in an Arctic climate.

In all these respects they must suffice for themselves. They must procure the material for their implements, houses, and clothes: each must for himself manufacture these things, and the maker must himself direct the development of his use of the hunting implements,

such as the kayak and dog-sledge, towards astounding dexterity. This falls to the lot of the man, but, at the same time, versatile calls are made on the woman's ability.

From a purely geographical point of view the Eskimo can be discriminated in various groups, but a form of tribe such as we know, for example, from the North American Indians only occurs as a rare exception in South Alaska. The sociological unity with the Eskimo is not in the tribe but in the settlement<sup>1</sup>, but at the same time it must be remembered that the latter is not stationary, there being a difference between its location in summer and winter, and both fluctuate, though with some Eskimo the winter settlement is almost stationary. Only in a slight degree do the conditions of descent, language, and the like, form a setting for the appurtenances of each settlement. Much more do their social, and above all, economic interests, maintain their unity.

The Eskimo settlements, or rather, perhaps, groups of hunters, are in an eminent degree self-sufficing groups. The Eskimo must himself procure all that is needful, food as well as material for tools, dwellings, and clothes. In themselves they bring along with them their traditional methods, learnt from their fathers, for the use of hunting implements and for the making of houses and clothes, etc.; but, for the rest, they are dependent on the surrounding nature and its products. This ground for their existence and for the higher features of their culture I shall call the economic culture<sup>2</sup>. Tradition and natural surroundings are the two determining factors for the culture. What is traditional and customary can be transformed either by something having been learnt from without (borrowed culture), or by an adaptation having taken place in accordance with the altered natural conditions (new adaptation).

With a primitive people like the Eskimo which is partly a remote border-folk and partly inhabits districts with distinct geographical characteristic features, it is natural to assume that new adaptation has played an important rôle in the origin of the various nuances of the Eskimo culture, and perhaps, also, in the birth of the culture itself.

What will be given in this work, then, will be an attempt to follow the adaptation or the direct dependence of the culture on nature by studying the relation between the conditions of nature on the one side and the conditions of culture on the other. Finally an

<sup>1</sup> cf. MAUSS et BEUCHAT, pp. 53 sqq.

<sup>2</sup> I prefer in this connection the expression "economic culture" to "industrial culture" or to the even more comprehensive "material culture", as I wish to express that it is just the basis of existence (especially the procuring of food), answering to the economic basis of the higher forms of culture, which will here be studied and pursued.

attempt must be made, by comparing the results gained hereby, to form a picture of the development.

Here a purely anthropogeographical problem is in question, in that we understand by anthropogeography the study of the geographical factors to which the culture has adjusted itself, and on which its existence is dependent. It is a well known fact that the geographical factors, or such circumstances, as, for example, the distribution of land and water, the form of the coasts, the conditions of ice, rivers and lakes, climate, and flora and fauna have a determining effect on human culture — above all on the underlying economic culture, and nextly on the higher and more complex conditions of culture, such as the community, the family etc. FRIEDRICH RATZEL was the first to bring all these subjects under a general view, and he created the term anthropogeography for that branch of the science.

Most authors are still content, however, to present the adaptation of culture to nature in its general features. We, however, must proceed in a more exact manner, and must divide the Eskimo domain into its individual geographical provinces, or into the natural geographical individualities, i. e., the smaller domains where the geographical factors must be regarded as homogeneous, and we must then find and present the typical stamp of the economic culture in each of these latter domains. This done, we shall try whether it is possible by comparing all these nuances in the Eskimo economic culture to ascertain which of them is the oldest.

In many respects the Eskimo territory is extraordinarily well adapted to be the subject of such anthropogeographical treatment, as, on account of its lengthiness and its alternations as regards the position of the coast, the geological structure of this, and the condition of ice, it is relatively easily divided into individual sections with natural borders. In the next place an otherwise so encroaching factor as the flora may be almost entirely excluded from these reflections, because the alimentation of plants plays only a slight but somewhat variable rôle with all groups, and wood, as material, must almost always be procured by special means (in the first place from drift-wood). Finally, as a result of the geographical peculiarity, consequent to the northern latitudes, that the animals are few in species but abundant in individual numbers, the only important means of earning a livelihood, hunting and fishing, is more methodically carried out than in the southern latitudes, where the physiognomy of the surrounding nature is less sharply defined.

Generally speaking, by "method of use" is meant those trained movements and actions which are bound up with the use of an implement. Such a "method of use" is a real cultural possession, inasmuch as familiarity with it is a demand which the primitive community makes on the single individual in order that he may be

recognized as a valid member. In the next place, the method of use, seeing that it is taught from generation to generation, is fully as much one of the continuous lines which run through the cultural life as is the form of the implements — the unbroken transition of which archaeology has proved empirically — and finally it is by that degree of dexterity and efficacy with which the methods of use are carried out that the cultural strength and soundness of the tribe is measured. One of the first injurious results of primitive folk, especially hunting people, coming in contact with Europeans shows itself in neglect of the training in economic methods, and a kind of proletariat arises which is incapable of procuring its food, and may be said to have neither the one culture nor the other.

This, however, is only the one side of the entity and ethnographical significance of the method of use. Besides their sociological independence, the methods of procuring a livelihood are intimately bound up with the conditions of nature, and an alteration takes place when the conditions of nature change. Such alterations do not occur spasmodically. But, from old forms of dexterity, confronted with new demands, a new method of hunting or fishing is slowly and cautiously developed

According to this view, the use of the implements is, as has been stated, the central and fundamental factor in the material culture of a tribe, inasmuch as the meaning of the word "implement" is apprehended in a wider sense. And the trained, concentrated Eskimo methods, just on account of their sensitiveness to the conditions of nature on the one hand, and their value both to the individual and the community on the other hand, become very important subjects for study. They represent, so to say, dependence on nature, or that part of hunting humanity which unites natural surroundings with human culture. This view holds good generally, but the methods of use are most easily studied with hunting people like the Eskimo, with whom they appear in their purest form, and where the greater part of the culture is directly expended on the means for subsistence.

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If one thinks of such a hunting tribe transferred from its native soil to a district, which in some respects presents changed conditions of nature, one knows that at first it will try to live in the old way, and that only little by little will the new conditions assert themselves and have an altering influence on their culture. And it is clear that it is through the methods of hunting and fishing employed that the influence takes place. At first the old known methods are employed, but by degrees new possibilities reveal themselves with some of the methods, while others, perhaps, die out; and while a revaluation and renewed development takes place amongst the methods of subsistence the implements follow suit, and shape themselves in

accordance with the demands of the new methods of subsistence. If it were possible to study such a transition of culture on the spot, it must be maintained that that of pursuing the continuity in the methods and dexterities would be the most impressive aspect of cultural development which could be given.

## Some Geographical Observations on the Eskimo Domain.

The purely Arctic regions inhabited by the Eskimo belong geographically to three different domains. Towards the west one has the coast of the mainland as far as Dolphin and Union Strait. In the centre lies the great Arctic Archipelago with the adjacent mainland coast, and finally towards the east, like an entity in itself, lies Greenland.

The coast of the mainland towards the west, which has an uninterrupted course without any groups of islands lying in front of it and is without many protected indentations, lies open towards the Arctic Ocean. The coast land itself, which is built up of new formations, is low, and descends evenly into the ocean, which frequently has banks and bars along the coast. The Archipelago consists of a confusion of islands and sounds, the charting of which is due to the English N.W. Passage expeditions and the Franklin search-expeditions, and, later especially to those of GREELY and SVERDRUP. Two water-ways in particular are to be remarked, both of which intersect the Archipelago from east to west. The northern is formed by Lancaster Sound, Barrow Strait, Melville Sound, and Banks Strait, which together separate the Parry Islands towards the north from the more southern series of large islands which sometimes are called by a common name after FRANKLIN, and which consist of Baffin Land, North Somerset, Prince of Wales Land, Victoria Land and Banks Land. Along the south side of these islands runs the southern water-way, or North-west Passage, which follows the mainland, and consists of Hudson Strait, Fury and Hecla Strait, Bellot Strait, the waters round King William Land, Dease Strait, Coronation Gulf together with Dolphin and Union Strait. The two passages are connected by four straits, of which especially is to be noted Mc. Clintock Channel, which runs from north-west to south-east.

In contrast with the north-western coast lands the Archipelago consists of old formations. The large region of primitive rock in North-east America ceases at the west end of Coronation Gulf, and forms the southern portion of the Archipelago, for which reasons the

southern passage generally has high granite coasts, with reef and skerries. Along the north side of the primitive rock runs a belt of silurian formation, and afterwards, the further one goes towards the north and the north-west, are always newer palæozoic rocks. The east coasts of Baffin Land and North Devon are, however, essentially granitic, and face the other great region of primitive rock, Greenland. The climate is distinctly Arctic, having only two seasons: a short summer with open water, and a long winter when everything is congealed. As regards climate the Archipelago has retained much of the continental character of the mainland. In several places glaciers are found in the higher regions, but it does not seem that continuous masses of land ice cover any of the islands as they cover Greenland. Both in summer and winter north and north-westerly winds prevail. Of very great importance are the conditions of the sea ice, as the existence of the Eskimo is just as much bound up with the conditions on sea as with those on land. But in the Arctic regions, the sea is a very different element from the undulating billows of milder zones. Only during a couple of months in the summer, and in the most favourable areas is it sea in the ordinary sense of the word. The greater part of the year it is ice-covered and solid; but even this is not all, because only in a few places is the sea allowed to freeze smoothly as a lake does with us. Wind and current frequently drive masses of loose blocks of ice or pack-ice in towards the coast, whereby the newly formed ice is broken up, and the surface of the sea becomes rough and impassable, when the blocks freeze together in a coherent conglomeration. Only in the most protected, remote straits and among the skerries are formed the smooth ice-surfaces which are called winter-ice in contradistinction to pack-ice, which may consist of blocks several years old. With the winter-ice, which breaks up every year, must not be confounded the, in places, perennial icefoot which in many places follows the coast, and forms a smooth and safe path for travelling by sledge. In this connection the question of whether the pack-ice originates as glacier ice or as sea ice is of very small importance. The size of the blocks is only of significance in so far as regards the greater or lesser force with which they press forward, or, in the case of their stranding on bars somewhat off the shore, form a barrier in front of deep coast waters, over which the winter ice can form. The latter happens at the north-east coast of Baffin Land, and especially at several places between Bering Strait and Point Barrow.

The conditions of ice at Greenland are well known. On the west coast the winter ice lies only on the innermost waters, whereas north of Egedesminde it may lie further out to sea; and, as a rule, in North Greenland it is only in the month of July that it entirely melts away. It is from the drift-ice that Greenland gets the Polar sea-ice,

"Storisen," which by the Polar current is carried along the east coast, rounds Cape Farewell, and blocks the west coast till about 64° N. lat., together with the west ice which comes from the ice-filled sounds in the northern part of Baffin Bay, and in the spring months reaches as far down as 66°—69° N. lat. On the north and north-west coasts of Alaska and round the mouth of the Mackenzie, masses of Arctic Ocean pack-ice lie close in to land, and prevent all intercourse except on the smooth ice across the level innermost ice over shallow water, which is used in the spring by the Eskimo when travelling by sledge from Point Barrow and Colville River to the mouth of the Mackenzie. Only for a couple of months does the ice withdraw and leave a narrow open water-way between the land and the pack-ice. Of especially great extent is the open sea west of Point Barrow, where the edge of the pack-ice in August generally lies north of 70° N. lat., as it also does off the mouth of the Mackenzie where the warm river-water evidently plays some part.

In the Archipelago the conditions of ice must be treated with especially great caution, as the waters and currents are so complicated, and because no one has yet tried to give a collective description. The known conditions, which can be taken as a starting point, are the grouping of the islands, the prevailing north-west winds, with the open waters, which have been substantiated several times by English sailing expeditions.

A glance at the map shows with certainty that the ice-masses can come only from the north and north-west, and on account of the north-westerly winds there must be pressure in the direction of the south and south-east. Through Smith Sound and the confusion of straits between Sverdrup Islands and Parry Islands the above mentioned west ice stretches out into Baffin Bay, but that this and, on the whole, the pack-ice in the eastern sounds of the Archipelago are so comparatively inferior can only be due to the protecting islands. In the summer numerous expeditions have passed through Lancaster Sound and Barrow Strait. JOHN ROSS and MC. CLINTOCK went south through Prince Regent Inlet and along the east coast of North Somerset and Boothia Felix. JOHN FRANKLIN must either have passed this way and through Bellot Strait, or through Peel Sound and Franklin Strait to the south-east end of MC. Clintoock Channel, where his ships were crushed in the pack-ice on the west-coast of King William Land. A few years later MC. CLURE and COLLINSON sailed in two ships from Bering Strait. COLLINSON sailed his ship to Dease Strait and extended his investigations to Victoria Strait, west of King William Land, but returned when he saw that he could not advance further on account of the pack-ice. A year afterwards, he went up to the north end of Prince of Wales Strait, but the pack-ice again blocked his way. A year previously, MC. CLURE had been stopped at the same spot in Prince of Wales

Strait, and when he tried to take his ship west of Banks Land he had to leave it on the north-west coast of the island.

Right through the Archipelago, and following the direction of the wind from north-west to south-west, runs a fairly broad water-way, Banks Strait, which has for continuation Mc. Clintock Channel, through which no ship has ever succeeded in passing, as it is always, winter and summer, found blocked with pack-ice, or, as it is often designated on English charts, hummocky ice.

Towards the north-west, Banks Strait is open to the Arctic Ocean. Towards the south-east the Mc. Clintock Channel behaves almost like a blind alley, inasmuch as it is continued only in the narrow waters round King William Land. It can be understood, then, how the north-west wind presses the masses of drift-ice together in this little water-lane, which has shown itself to be the most effective obstacle to the navigation of the North-west Passage. Mc. CLINTOCK, who also found it unnavigable by ship, thought, however, that it would be possible for a ship to pass through Bellot Strait and Franklin Strait and then south-east round King William Land, through Ross Strait and Simpson Strait, and further west to Coronation Gulf, and AMUNDSEN's Gjöa Expedition realized the thought of navigating the more southern North-west Passage.

Another peculiar feature which has proved to hold good in these Arctic regions is that the conditions of ice on the eastern coasts invariably are more unfavourable than on the western coasts. This manifests itself sharply on the east coast of Greenland as compared with the west coast, where in Smith Sound, the ice-laden current directly follows the coast of Ellesmere Land, while the coast opposite is free, as is also the case in Bering Strait, where exactly corresponding conditions exist.

The Arctic flora is of such slight determining importance to colonisation that it is unnecessary to dwell upon it. Hardly anywhere do the berry fruits and the few other edible vegetable substances have any influence on the site of the settlement. And as it is not able either to yield any wood for implements, the occurrence of drift-wood is of greater anthropogeographical importance<sup>1</sup>, even if, in reality, there are many places where considerable quantities of berries are gathered and eaten.

All the more attention must be paid to the fauna, and especially the aquatic mammals. Of the land mammals the reindeer is most important, in that it has the widest distribution, and is hunted by the majority of Eskimo tribes, with the exception of those in the very south of Greenland and Alaska where it is no longer found, as formerly

<sup>1</sup> As to supply of drift-wood to the Arctic Ocean compare map, Vol. I in P. C. SUTHERLAND, Journal of a voyage in Baffin Bay, etc., 1850—51. London, 1852, Vol. II.

it was hunted by the Polar Eskimo with whom the method of hunting has been forgotten. The reindeer everywhere wander to the coast in spring and autumn, and back again to the interior; and of special interest are these migrations across the Rae and Boothia Isthmuses, across Simpson Strait as also the narrow Straits at Coronation Gulf, where the herds of reindeer in the spring go northward across the ice, and return in the Autumn. Corresponding migrations of the musk ox, though in an inferior degree, may have been observed across the isthmuses, but for the rest the musk ox is a more distinctly settled animal, which keeps to a definite district. The former idea that the meat of musk ox is not appreciated by the Eskimo is entirely wrong. The meat of the musk ox is actually preferred to that of the reindeer, which is generally mentioned as the favourite food of the Eskimo, and all those tribes which live in the vicinity of musk ox districts carry on the hunting of them with the greatest zeal. Another thing is that the diffusion of the musk ox is confined to the Barren Grounds, the Archipelago (with the exception of Baffin Land and Southampton Island), and the north coast of Greenland from the Humboldt glacier to Scoresby Sound (cf. M. o. G., Vol. 34, p. 401: map showing the distribution of musk ox). Of other terrestrial animals the hare, which in some places is snared, plays a rôle in the support of life, while the Polar fox provides material for clothing, and the wolf, which in the places where it occurs in large numbers may have a decimating effect on the reindeer stock, is regarded as an enemy to be exterminated either by might or sleight.

At the transition between terrestrial and aquatic animals stands the Polar bear, which also, in some places, has some economic value for the Polar Eskimo, for whom, for example, it affords material for the specially warm clothing which these people need during the winter; but it is of even greater value in that it gives the Eskimo the opportunity to display their courage, and gives full play for their sportsmanship, besides playing an important rôle in the folk-lore and psychology. On the other hand the economic basis for the existence of the Eskimo is seals, or more correctly, four kinds of seals: the Ringed Seal (*Phoca foetida*), the Bearded Seal (*P. barbata*), the Greenland Seal (*P. Groenlandica*), and the Walrus. The Greenland Seal, which, though it is of the greatest importance as regards South Greenland, is of minor importance, as it dwells only in the North Atlantic and does not visit the real Arctic waters; and where other districts are concerned, the same may be said of the walrus. Other kinds of seals, such as the Crested Seal at Greenland and the Fur Seals at the Aleutian Islands, likewise play a local rôle. Undoubtedly the occurrence of the Harbour Seal (*P. vitulina*) is general in Southern Arctic waters, but it is only in the most Southern part of Alaska that it is of great importance. Of the four first mentioned seals, the Ringed Seal and

the Bearded Seal are Arctic, or, as TORELL terms them "inhabitants of the Glacial Zone." Moreover they are circumpolar, and the Ringed Seal, in particular, is met with far down in the Temperate Zone. One has come across the Ringed Seal throughout the whole of the Smith Sound passage, and it seems that SVERDRUP's Expedition first proved its northern limit, which runs north of Parry Islands and in 90° W. long. to Grinnell Land. It occurs in quantities along the north coast of the American Continent and around Bering Strait as far as 60° N. lat. Its favourite abode is in long and deep fjords or inside skerries, where the water during nine months of the year is covered by smooth winter ice, and in such places it is found all the year round, sometimes in immense quantities. FABRICIUS<sup>1</sup> says of this seal: "The ice is its proper element, on which and in the presence of which it prefers to be. This, however, must be understood to mean the firm, flat ice, not the drift-ice, where it is seldom found, except on the loose pieces which calve out from the fjords." WINGE<sup>2</sup> says of the Ringed Seal that "it likes best to be where ice is lying; it prefers the firm, flat ice, and for this reason lives preferably in fjords which are frozen over during the whole year; it then, itself, pushes and scratches holes in the ice and the overlying snow, in order to be able to blow, or, in addition, to creep up to rest, or it helps itself by means of holes or cracks which appear during ebb-tide and flood-tide, or by the calving of the icebergs." In the spring it brings forth its young in a snow burrow, and, when the snow melts owing to the rays of the sun, creeps up on the ice to sun itself. Besides being caught by the commonly employed Maupok method, and, also, at the spring-hunting of the seals lying on the ice (Utok hunting), it is caught in nets in some places in Alaska, and, in recent times, has in many places been captured with firearms. While the quantities of Ringed Seal provide the Eskimo with nutriment and fuel, the Bearded Seal, which occurs in small numbers, is significant on account of its strong skin, because this provides material for thongs and coverings for boats. It is also a very northern form, which by preference keeps to the great surface of water outside the fjords. It is found at Greenland and in the Archipelago. MURDOCH<sup>3</sup> mentions it at Point Barrow. Around Bering Strait it is extremely rare, and, according to ALLEN<sup>4</sup>, it has never been seen at the Pribilof Islands. Like the Greenland Seal in South Greenland and Labrador it must be hunted for choice with a harpoon from a kayak. The walrus is the one seal which is most particular in the choice of its abode. It requires a not too deep bottom, with an abundant occurrence of testaceous animals, together

<sup>1</sup> FABRICIUS, IV, p. 82.

<sup>2</sup> WINGE, p. 432.

<sup>3</sup> MURDOCH, I, p. 56.

<sup>4</sup> ALLEN, p. 669.

with a special combination of current and ice. It is distributed over two localities, which have no reciprocal connection. According to NORDQUIST<sup>1</sup> and ELLIOT<sup>2</sup> the walrus north of Bering Strait goes only to Point Beechey (ca. 150° W. long.) on the north coast of Alaska. In the Archipelago it is not known to have been observed to the west of a line from south to north through Boothia and North Somerset. As will be mentioned later it is only in certain places that it plays a principal rôle in the life of the inhabitants. Among the numerous kinds of whales which live and have lived in the Arctic Sea regions there are only 3 which have been of great importance for the Eskimo, and they are the Greenland whale (*Balaena mysticetus*), the White Whale (*Delphinopterus leucas*), and the Narwhal (*Monodon monoceros*). Their occurrence is common in the northern parts of both oceans, as is their regular migration from North to South according to the season of the year and the extension of the ice. In the summer they go along the north coast of Alaska to the open waters off the mouth of the Mackenzie River; but in Coronation Gulf and the waters round King William Land no whales are found. In Bellot Strait White Whales were, however, observed by the Mc. CLINTOCK Expedition, so it is not unreasonable to assume that the indicated packing of the ice through Banks Strait and Mc. Clintock Channel sets a boundary to the migrations of the whales towards the west.

After this short geographical description the distribution of the Eskimo can briefly be expressed by stating that they inhabit the coasts of Davis Strait and Baffin Bay, the coasts of the southern North-west Passage and those of the Alaska Peninsula, or, in other words, all the places where seals occur in abundant quantity; and, as the occurrence of these in the Archipelago and in all the pronouncedly Arctic regions is contingent upon the winter ice, it may be added that, as regards these districts, the condition is that the sea regions shall be protected against the intrusion of the pack-ice.

FRANZ BOAS was the first to make clear the significance of the winter ice for the Eskimo settlement. Former investigators had regarded the sea ice in all its forms almost as an unavoidable obstruction and enemy rather than as a necessary basis and condition for existence. BOAS pointed out that, as regards the settlement, the pack-ice and the smooth winter ice were in their effect two opposing elements, in that the first is an impediment to hunting and intercourse while the second forms the exact condition for these. His conclusions regarding the winter ice, and the significance of the coast contours for the formation of this, BOAS<sup>3</sup> set forth in the following lines:

"Besides the configuration of the land, the extent of the land ice

<sup>1</sup> NORDQUIST, II, p. 94.

<sup>2</sup> ELLIOT, II.

<sup>3</sup> BOAS, II, p. 417.

formed during the winter is of vital importance to the inhabitants of the Arctic region, because during the greater part of the year it affords the only means of communication between the tribes, and because in winter the seal, which constitutes the principal food of the Eskimo, takes to those parts of the coast where extensive floes are formed. Therefore the state of the ice regulates the distribution of the natives during the greater part of the year and must be considered in studying the habits of the Eskimo. The extent of the land ice principally depends on the configuration of the land and the strength of the currents. On a shore exposed to a strong current an extensive floe can only be formed where projecting points of land form deep bays. We find the distribution of ice regulated in accordance with this fact all around the shores of the Arctic Ocean."

It is then not everywhere along the mentioned coasts that Eskimo can live. The region is broken up into a series of separate territories or centres for population, consisting of protected fjords, sounds and inner waters. This holds good of all the Arctic coasts, whereas along the Subarctic coasts where hunting on the ice is dropped the settlements generally are more continuously distributed along the coast.

In the following, the economic culture of each of these natural groups will be investigated with a special view to its adaptation to the local conditions of nature. When the whole series is described, which here is only to be done briefly and with emphasis upon the type, it will be decided which of these nuances of adaptation is the original one, and in which district it has its home.

The first group to be mentioned consists of the Baffinlanders, especially studied by BOAS, after which come the Labrador Eskimo, and then comes the Polar Eskimo group, the most northern but not the most pronouncedly Arctic people amongst the Eskimo, and then follows the group of West Greenland, from Melville Bay to Cape Farewell, with which there will be some mention of that most interesting tribe at Angmagsalik on the east coast of Greenland. The following groups will be the Eskimo of the Melville Peninsula, the Kinipetu tribe which inhabits the southern part of the Barren Grounds west of Chesterfield Inlet, the Netchillik Eskimo or the tribes at the waters between King William Land and the mainland, the tribes around Coronation Gulf, the Mackenzie Eskimo, the inhabitants of the coasts of the Arctic Ocean west of Point Barrow, the Eskimo tribe on the west side of Bering Strait, the inhabitants of Norton Sound with the Yukon Delta, of Kadjak with neighbouring isles and coasts as also the Aleutian Islands.

With the description of these sections essential regard is paid to geographical conditions and none at all to the immediate numeric distribution. A consideration of this may, however, also be of interest. When one reckons that there are 40,000 Eskimo altogether, about

12,500 belonging to Danish Greenland and Labrador and 14,500 to South of Bering Strait. In other words the central Arctic regions which are several times greater in extent and coast lengths than the Subarctic regions have only  $\frac{1}{3}$  of the total number of Eskimo, here grouped in a few districts, while on the Subarctic coasts the form of settlement is more regular.

For the rest it must be remembered that the Eskimo are not essentially resident, but that they change their residence in accordance with the change of the seasons and the altered conditions of hunting. It would therefore be more correct to talk about constantly and regularly visited regions than about fixed inhabited ones. The deserted settlements which are found on numerous coasts, and may sometimes be judged to be of considerable age, are evidently also connected with this roaming. Boas, who has subjected this question to investigation, rejects the conclusion which has at times been drawn that the Eskimo in past days inhabited several Arctic coasts which they left later in consequence of deterioration in the climate and the freezing of the sea. He finds sufficient explanation in the periodical shifting which take place even today on the boundaries of the areas which are inhabited permanently. He even draws a parallel between the boundary line for the distribution of the Eskimo and the northern limit of woodland, which latter is not, however, a definite line, either, but a belt within which the woodland region advances towards the north in favourable periods only to recede during subsequent and unfavourable ones, leaving dead and dried up stumps. As reasons why the Eskimo feel inclined to look for new hunting grounds Boas mentions the periodical changes in the conditions of the ice, the evacuation of old hunting grounds by animals worth hunting, and the pressure from neighbouring tribes, and he thinks that the question of the periodical migrations and the origin of the deserted settlements may be solved by a study of the wanderings which the Eskimo undertake at the present time. That Boas is right in his view that the deserted dwellings are not due to an earlier fixed settlement is indubitable. In my paper on the Polar Eskimo<sup>1</sup> I have tried to give a more precise explanation for the occurrence of the deserted abodes in the northern and western parts of the Archipelago, in that I have associated the migrations with the occurrence of the musk ox and the comparatively rapid decimation of this animal by reckless hunting, and also with the poorness of these somewhat northern regions in seals and fish, which might serve as a support in times of stress. The views then expressed by me have later been confirmed by the observations of V. STEFANSSON, published in 1913. This author, who speaks Eskimo, and has lived in near contact with the Eskimo from Point Barrow to Coronation

<sup>1</sup> M. o. G., Vol. 34, pp. 395 sqq.

Gulf, has specially added to our knowledge about the Eskimo tribes which group themselves around Coronation Gulf. His observations and experiences as regards the occurrence of the musk ox he comprises in these indubitably correct words: "It is the nature of the musk ox that it cannot long survive in any country inhabited by a hunting people. We find nowadays that the range of the musk ox and the range of the Eskimo are mutually exclusive, for the Eskimo always exterminate those within their range. Their hunting method allows of nothing else, for when a dog or two have been set on a band of musk oxen they will hold the animals in one place indefinitely and give the Eskimo time to kill them at leisure."

By examining the kitchen-middens in North Alaska, STEFANSSON<sup>1</sup> found evidence that the Eskimo had there hunted the musk ox, and from the traditions of the Eskimo he thought that he was able to calculate that the last musk oxen must have been killed about 1860. Immediately east of Mackenzie Delta, musk oxen have been slain within the memory of man. Around Coronation Gulf the animal has now disappeared within the region which the Eskimo can easily reach when on their hunting expeditions; on Victoria Island it is only found on the rarely visited north coast; on Banks Island musk oxen are numerous, and something similar holds good of the other side, the interior region of the Barren Grounds. Probably it is also the Eskimo who have exterminated the musk ox in the Melville Peninsula and in Baffin Land, inasmuch as these lands are not so large that the relatively numerous groups of Eskimo living at the coasts cannot chase the much sought after game. Only the interior and more inhospitable islands in the Archipelago to the north of Boothia and Victoria Island, which are cut off by means of pack-ice, have, like the Barren Grounds, been able to afford the musk ox hiding places and by-places where the small wandering groups of Eskimo have not been able to exterminate them entirely. These small hunting groups — as I have previously pointed out — either had to become extinct or advance further "along the musk ox track," and must then, in most cases, have landed in Greenland. On comparing a map of districts with deserted Eskimo ruins (for example, THALBITZER in M. o. G., Vol. 31) with a map of the distribution of the musk oxen (M. o. G., Vol. 34, p. 401) the conformity is immediately apparent; the region is essentially the same. Or, to phrase it differently, it may be said that most of the districts where the Eskimo are now extinct, or from which they have vanished, lie inside the present range of distribution of the musk ox, and there is hardly any doubt that these two points, the Eskimo becoming extinct and the self-assertion of the musk ox, are to a certain extent reciprocally and correlatively connected.

<sup>1</sup> STEFANSSON, II, p. 450 and p. 455.

It is impressed on one in several places in the border districts how colonization which is in a permanent state of progression and retrogression, together with this settlement of hunting groups consisting of a few families, plays an inferior rôle, and may even be overlooked in this extensive region with its violent nature. As an example, shall be mentioned Banks Island, on the east side of which, at Prince of Wales Strait, Mc. CLURE and COLLINSON found such a quantity of ruined dwellings that they felt tempted to believe that the district was still visited, had not the ruins been covered with moss, the drift-wood been lying untouched on the beach, and Mc. CLURE's cairns and dépôts of provisions been found by COLLINSON to be undisturbed. The Englishmen had some reason in believing in a more permanent settlement here, as they came across a small tribe of Eskimo at Prince Albert Sound which was not far distant. The tribe, of which the most important centres of refuge are Prince Albert Sound and Minto Inlet, has again been heard of quite lately, in that it was rediscovered in the spring of 1910 by STEFANSSON, who thinks that here he has found a tribe with numerous fair individuals, the so called "blond Eskimos." The divers problems which the observation of this local phenomenon calls into existence are not to be dealt with here, as they lie outside our immediate task. Here will only be stated, however, that STEFANSSON will have it that Banks Island, at Mc. CLURE's time, really was inhabited by an Eskimo tribe which had its abode at Prince of Wales Strait, and that this tribe found Mc. CLURE's ship "Investigator" a couple of years after it had been deserted in Mercy Bay on the north coast of the island; thereby, together with the Eskimo at Prince Albert Sound, this tribe attained certain significance within the Coronation Gulf domain, because its members became distributors of iron, timber and other goods from the ship. Later on, or presumably towards 1890, this tribe in Banks Island is said to have become extinct on account of the occurrence of various kinds of famine.

The view, that the dying out of the Eskimo in certain districts should be connected with a deterioration in the climatic conditions or the like, has often been expressed.

There can be no doubt that this is generally wrong. The reason for Eskimo groups, which are not in contact with Europeans, becoming decimated at some periods, while at others they are perhaps increasing, must be sought for exclusively within the real setting for Eskimo life, and amongst the effects which this exercises on the surrounding conditions of nature. Among these effects must be emphasized, as mentioned, the predatory hunting of musk ox. Within the range of the musk ox and in the course of the 19th century, Eskimo, now extinct, lived on the north east coast of

Greenland, where CLAVERING and SABINE in August 1823 came across

a small group of 12 Eskimo who lived in a tent on Clavering Island (74° N. lat.). It is not inconceivable, however, that changes in the animal life of the sea, for instance of the Great Whales from the north east coast of Greenland in the first half of the 19th century, may also have been concurrent causes for the extinction of the Eskimo.

The conditions become quite changed in those places where the Europeans appear; there European influence may bring about great alternations in the Eskimo settlement. In Greenland one has seen how the trading and mission stations have attracted the Eskimo. The same state of affairs, only with more conscientious intention, has been caused by the Moravian Brethren in Labrador. How contact with the European culture can destroy almost entire Eskimo tribes was seen in early times in South Alaska, and in recent times in North Alaska since the American whale hunters have advanced as far as Point Barrow and the mouth of Mackenzie River. In Baffin Land, at Cumberland Sound, and on the south coast, the whaling stations have from remote districts attracted the Baffinlanders.

Finally, in this place may be intimated a solution of the problem, which to SHERARD OSBORN was so strange, viz., that in Lancaster Sound almost all the deserted Eskimo settlements lay on the north side. This is no doubt connected with the conditions of the ice. If, thus, the forming of a settlement is so dependent on the ice that the pack-ice renders it impossible while the smooth winter ice is a necessary condition, it can be understood that the prevalent north-west winds must fill up the southern coasts of the passage with pack-ice while there will be more prospect of smooth ice forming on the north side. It is this condition, probably, which has caused the Eskimo, who are accurate connoisseurs of the conditions of nature, not often to have felt tempted to try a more permanent settlement on the southern coasts of these waters.

## The Representative Types of the Economic Culture of the Eskimo.

In the following description of types, the object is first to show which geographical features — both physical-geographical and biogeographical — determine the Economic Culture of the Eskimo, and then to point out the methods (hunting methods, methods of conveyance, etc.) by means of which the Eskimo adapt themselves to the prevailing conditions. Next, an endeavour will be made, by a comparison of the different types of economic culture, to find out the original one, and therefore it is evident, that in all the descriptions it will be necessary, as far as possible, to go back to the original conditions before European and American influence interfered with the indigenous culture.

### Baffin Land.

Baffin Land has the form of a broad arch which connects the two north-eastern peninsulas of North America, Melville and Labrador. It is separated from the former by the narrow Fury and Hecla Strait, and from the latter by the broader Hudson Strait, across the western end of which a chain of islands forms a bridge. Lastly, Baffin Land, with North Devon and Ellesmere Land as a northern link, form a natural connecting link between the American continent and Greenland. While the outer or north-eastern coast-line has been explored and surveyed almost everywhere, this is not the case with the inner south-western coast-line, which is known only from a few visits, and from Eskimo records. This much, however, is known, that this inner coast-line is low and fairly unbroken in comparison with the north-western, lofty, rocky coast which has numerous deep fjords, rocky isles and ranges of skerries. By the two larger indentations, Cumberland Sound and Frobisher Bay, the south-eastern part of Baffin Land is divided into three peninsulas, the northernmost of which, Cumberland, is occupied by a lofty mountain chain, about 600 metres in height, which, along the coast, is continued towards north-west as far as Lancaster Sound. Towards south-west, this chain passes through a hilly headland into a level stretch of land which is continued to Fox basin. The two other peninsulas, Penny Land and Meta Incognita, and also Luke Fox Land, the south-eastern corner of Baffin Land, are equally

mountainous, and the mountains fall abruptly towards the sea, forming a highly rugged coast, while inland they sink towards the large lakes Amadjuak and Nettilling. The geological material of which Baffin Land is built up consists, as regards the mountain-tracts, of granite and gneiss, which are also predominant in the hilly headland. The level country, on the other hand, consists of silurian limestone. A continuous covering of land-ice does not occur; but ice-sheets usually cover the interior regions of the high land.

Although this great high-land is by no means difficult of access from the sea, owing to the fact that the amount of ice carried by the current which flows southwards along the coast from the southern sounds in Baffin Bay is not so considerable as that carried along the east coast of Greenland, yet it has been very little visited by scientific expeditions. The discovery of the country dates right back to **MARTIN FROBISHER**, 1576, and his successors, **DAVIS** and **BAFFIN**, and afterwards the Dutch and the British carried on whale hunting in the neighbourhood of its coasts, but our knowledge, as regards its nature and inhabitants, dates exclusively from the 19th century. Since 1818, when **JOHN ROSS** made his first voyage, Baffin Land has been visited by a series of ship-expeditions, whose object, however, was more to survey the coasts than to make geographical and ethnographical observations proper. From 1840 the whalers adopted a new mode of procedure; they established winter stations on land in Cumberland Sound, whence they could begin whaling immediately the ice broke up in the summer. Simultaneously, they came into close contact with the Eskimo, whom they employed, and paid with European goods. An attempt made by the Moravian Brethren in 1857 to carry on missionary work in Baffin Land was abandoned, on the grounds, that it was impossible to get hold of the population so long as they were dependent on the whaling stations, which exercised a highly demoralising influence upon them. Of recent years a missionary station has, however, been maintained on Blacklead Island in Cumberland Gulf, where, more particularly, the well-known missionary and Eskimo-friend, **E. Y. PECK**, who is also known in Hudson Bay, has been working. As regards science, we owe almost nothing to the whalers, for the latter, as a rule, had no interests of this nature. But in this respect, also, some change has taken place recently. Both **FRANZ BOAS** and **A. P. LOW** have made much use of the information they obtained from American and Scottish whaling captains, and among these, Captain **GEORGE COMER** from East Haddon in Connecticut should especially be mentioned; his area of observation was, however, more particularly Hudson Strait and the western side of Hudson Bay.

A better knowledge of Baffin Land and the Baffinlanders dates from **C. F. HALL**'s stay near Frobisher Bay during 1860—62, and from the Howgate Expedition to Cumberland Sound in 1877—78. But none of these expeditions — the latter of which has been described by **L. KUMLIEN** — has yielded results which can be compared with those derived from the studies made by **F. BOAS** at Cumberland Sound from August 1883 to August 1884. **BOAS**, in a series of papers, has given a full account of his important voyage.

Along the shores of Baffin Land the Arctic Current prevents the formation of smooth winter-ice off the precipitous, projecting cliffs, and permits of it only in the bays. Far to the north, where the shore is protected by the Bylot Island cutting off a large part of the sea, a small Eskimo tribe resides. Between Bylot Island and the narrowest part of Davis Strait an almost continuous fringe of rather smooth ice is formed, the formation of which is rendered possible by the presence of the many smaller peninsulas which are usually continued as shoals, and upon which the larger masses of ice run aground and collect as a bulwark against the destructive pack-ice. South of Cape Dyer the current is so strong that winter-ice can be formed in the bays only. On the evidence, partly of journals kept by whalers through a long series of years, and partly of his own and HALL's observations, BOAS<sup>1</sup> has made a close study of the ice conditions in Cumberland Sound. By a constriction, the centre of which is situated 65° N. lat. and 65° W. long., Cumberland Sound is divided into an outer and an inner part, of which the outer, owing to the strong tidal currents, never freezes. In the inner, an ice-covering is formed every autumn, the concave edge of which usually rests on two projections situated opposite to each other, and does not increase further in extent during winter. When the ice, during autumn, has attained considerable thickness, and has been strengthened by the freezing-in of icebergs and floes, it enlarges no further, as the pack-ice set in motion by violent currents is able to prevent an enlargement of the sheet from the addition of fresh masses of ice. Consequently, the extent of the ice is wholly dependent on weather conditions during autumn. The smaller fjord-branches freeze even in October, and the open parts of Cumberland Sound in November; but in the case of storms the ice may break up once or several times before it ultimately becomes permanent. And in the narrow entrances to the interior fjords there is open water throughout the whole winter, owing to the violent currents. Throughout June the ice may still be traversed by means of sledges, and not until in July or even in August does the ice break up. The fact should be noted that the ice does not disappear by thawing, but as the result of the destructive power of the waves. Therefore, so long as the winter-ice has a broad edging of pack-ice, it remains.

In Baffin Land reindeer are found, and here as elsewhere they migrate to and fro between the coast and the interior, but they hardly occur in such great numbers as on the northern peninsulas of the continent<sup>2</sup>. Of aquatic mammals the Ringed Seal is the most important, both on account of its abundance and because it is constantly present, whether the sea is open or is ice-bound<sup>3</sup>. On the other hand, the larger species of seal leave the coast when the sea freezes over, and the same applies to the walrus,

<sup>1</sup> BOAS, VI.

<sup>2</sup> BOAS, II, p. 438.

<sup>3</sup> BOAS, II, p. 471.

which also betakes itself outside the ice-edge. The Arctic Right Whale (*Balaena mysticetus*) which was hunted formerly by the Eskimo has long been of no importance along these coasts.

As regards the economic life of the Baffinlanders the year is divided into two principal parts, a short period with open salt and fresh waters, which is spent in the interior for the purpose of hunting reindeer and catching salmon, and a long period which embraces about three quarters of the year, during which the sea is covered with ice. In the latter period hunting the Ringed Seal (*Phoca foetida*) is the chief means of subsistence, and the movements of the settlement depend on the movements of the game. With the exception of a few places where they travel to the ice-edge to carry on walrus hunting, the Baffinlanders live throughout the winter on the ice and are not dependent on the open sea for their livelihood<sup>1</sup>.

It should be remembered that the inhabitants of Fury and Hecla Strait are most closely connected with the Melville Peninsula, and that the west coast of Baffin Land towards Boothia Gulf and Prince Regent Strait and also towards Fox Basin is uninhabited or rarely visited, while the eastern coasts have a more constant Eskimo-population. Boas has established a long series of groups or tribes, each of which has its principal residence in one of the larger indentations, and among which the inhabitants of Cumberland Sound, the so-called Oqomiut, are the most characteristic. According to his statements there must be altogether about a thousand Baffinlanders on the north, east, and south coasts. As regards their culture he gives as a type the Oqomiut group around Cumberland Sound, or more properly that portion of them whose home is on the north side of the sound, because the western inhabitants, the Talirpingmiut, spend so great a part of the year around Nettilling Lake that they approach an inland tribe in their mode of living.

In his maps of Baffin Land Boas gives the different settlements for four seasons of the year, which he calls spring, summer, autumn and winter. On comparing, on Boas's map of Cumberland Sound, the position of the autumn and winter settlements it is seen that there is hardly any difference beyond the fact that the latter have been moved further out on the ice or skerries. As the result of the summer reindeer-hunting is not so considerable that a large supply can be stored for winter use, it is necessary for the Eskimo to begin seal hunting as soon as the sea is ice-covered. The first weeks are spent near the coast, because it is dangerous to venture too far at this time of year, when the ice easily breaks up; at this period the Ringed Seal is caught in openings in the ice caused by currents, and at holes kept open by the movements of an enclosed iceberg; later on, when the iceberg freezes fast, the Ringed Seal must be sought further out, where it is taken especially by the Maupok method. In the month of March the snow burrows in which the seals have brought forth their young are sought;

<sup>1</sup> Boas, II, p. 461.

and ultimately, during spring, the seals which sun themselves on the ice are hunted (Utok hunting). Throughout the period spent on the ice snow houses are used as dwellings, and the people live more or less scattered, in accordance with the necessities of the chase.

During summer a further scattering takes place. The main part of the Baffinlanders go inland for the purpose of fishing and hunting reindeer; but in certain localities small groups of them remain on the coast to hunt the larger species of seal and the walrus, and, formerly, the whale. In the interior of the country the tents are pitched in those valleys which lead from the interior to the coast, and along which the reindeer herds must pass on their wanderings. The method of reindeer hunting mostly followed is to kill them from the kayak while they are swimming across a river or lake. The hunters either lie in wait at a river where reindeer herds are accustomed to arrive, or the herds are driven into the water from narrow peninsulas or by means of two converging rows of stones. Such rows of stones, usually leading into a lake or into the sea, occur everywhere in Baffin Land, and some of them appear to be very old<sup>1</sup>. Salmon are caught with the three-pronged spear. To lure fish, an artificial bait is used; artificial dams are also thrown up to shut out the fish from the sea. Fishing hooks are used, and very old forms have been found.

During summer the larger seals and the White Whale are captured from kayaks, and in former times the large White Whales were pursued in the umiak. The umiaks play the most important rôle along the outer coasts of Davis Strait itself, where the sea is open for a longer time than within Cumberland Sound. According to BOAS's<sup>2</sup> observations just the reverse is the case as regards the kayak. Even in 1884 many years had passed since any kayak had been built at the fjords of the east side of the Cumberland peninsula.

The dog sledge is, however, the Baffinlanders' chief means of conveyance; it is nowhere wanting, and it is of especial importance as regards seal hunting on ice during winter. Frequently, only two forms of dwellings are used, the tent during the summer and the snow house during the winter; but occasionally more solidly built houses of stone and earth are also built. From the numerous ruins BOAS concludes that in former times such houses were more frequently used than at the present day. The houses are rounded and are frequently dug in the slope of a hill-side. The roof has usually been supported by whale-ribs and was of seal skins stretched over the whale-ribs and covered with a thick layer of *Andromeda* and over that a layer of earth. Each house has as a rule been occupied by two families. In kind, and partly in form, the implements of the Baffinlanders resemble in most points those of the Greenlanders. Intercourse with Europeans has now produced changes in the material, but not to any great degree in the forms.

<sup>1</sup> BOAS, II, p. 501.

<sup>2</sup> II, p. 486.

According to BOAS's investigations there can hardly be any doubt as regards the route by which the Baffinlanders have migrated into their present coastal districts. From the Melville peninsula they have followed the transverse hollows of the country, which as a rule are continued as deeper indentations to the east coast. From here one stream has gone northwards across North Devon to Smith Sound, while another has gone from the south coast of Baffin Land across the bridge formed by the islands in the west end of Hudson Strait to Labrador. The features given by BOAS of the economic culture of the Baffinlanders, and especially of their annual economic cycle, show distinctly that their original economic culture has been of an Arctic character<sup>1</sup>.

### Labrador.

The peninsula of Labrador is a mountainous country which consists of old eruptive rocks, and towards its north-eastern coast rises to considerable heights. From an anthropogeographical point of view it is divided into two different parts, (1) the interior occupied by numerous lakes, bare rocks, and woods, and (2) the lofty, indented, rocky coasts of the north-east and north-west sides, which, like the east coast of Baffin Land have a fringe of skerries.

Corresponding to this separation is the division of the population into Indians and Eskimo, the former inhabiting the whole of the interior of the peninsula, and the latter the coasts inclosed by the skerries. What is especially peculiar to the sea here is the enormous tidal movement; the difference between low-tide and high-tide having been registered to be on an average 12 metres, capable at times of rising to 20 metres. In consequence the current through Hudson Strait is very strong and only the skerry-protected inclosure is covered with a level layer of ice during winter, while the unconfined sea is open and filled with drifting floes. TURNER<sup>2</sup>, who mentions the dangerous navigation along the north coast of Labrador says: "In August and September the strait is comparatively free from large floes, but after this period the seas, fjords and other protected waters may freeze over in a single night." But, as a rule, the protected waters, to which not even the floes have direct admittance, are free from ice from May till sometime before December. In spite of the comparatively low latitude, the flora of the cliffs and the marine fauna very nearly approximate purely Arctic forms. The seals, which were formerly extremely abundant, have now diminished greatly in numbers, in consequence of the persecution inflicted on them by the seal-clubbers; but the Ringed Seal and the Greenland Seal still occur in great numbers. The walrus is said previously to have lived far within the Gulf of St. Lawrence, where the last of them is said to have been exterminated on Magdalene Island by English fishermen<sup>3</sup>.

<sup>1</sup> BOAS, I and II.

<sup>2</sup> TURNER, I, p. 172.

<sup>3</sup> A. S. PACKARD, I, p. 70.

As regards the supply of wood for boats and implements, the Labrador Eskimo procure this not only from drift-wood, and from the willows and alders of the coast, but also by travelling 40—100 kilometres up the course of the rivers, which brings them within the forest-limit. Such sledge journeys are made during winter by the inhabitants of the north-eastern coasts<sup>1</sup>.

In contradistinction to the inhabitants of Baffin Land and Greenland, whose distribution is limited only by natural conditions, the Labrador Eskimo are excluded from the interior of the country by the presence of the Indians.

As might be expected, the relations between the two people are of a hostile character because both aspire to the lordship of the reindeer hunting in the coastal districts. Since the Eskimo must be regarded as having immigrated from the north across Hudson Strait, we may be justified in concluding that they were the last to arrive. This, however, does not appear to be the case. According to LUCIEN M. TURNER, who has made Labrador the object of a thorough ethnographical investigation, the Indians were the last to immigrate. On the basis of the folklore of the two people and on their own traditional ideas, the author in question thinks that he can prove that the Indian population of the interior and northern districts of Labrador have immigrated at a comparatively late period; perhaps they have been expelled from the south. The fact of their being Algonkin Indians favours the belief that they have come from the regions between the St. Lawrence and the Hudson, but the question whether they found the Eskimo on the coasts and whether these were at that time the only inhabitants of Labrador does not require any answer in this connection. The same is applicable to the other interesting question regarding the previous distribution of the Eskimo along the coasts of the Atlantic, which is connected with the problem of the Scandinavian Greenlander's collision with the Eskimo or the Indians. As the example from the west coast of Greenland shows, the Eskimo Arctic culture may very well be changed into a more Subarctic form if only a sufficient abundance of marine mammals is present, but it must be maintained that on a coast in the temperate zone the Eskimo culture must lose all its peculiar character, or it would, in other words, meet an anthropogeographical limit. It is probable that the Gulf of St. Lawrence has formerly been inhabited by an Eskimo population, which, however, even in the days of "discovery" were greatly hustled by the Algonkin Abenakis; till somewhat within the 17th century the eastern part of the north coast of the Gulf of St. Lawrence is said to have been inhabited by the Eskimo. At the present day Hamilton Fjord, at 54° N. lat., is the southern limit of the Eskimo; but they formerly lived at the Strait of Belle Isle, and even in historic times occasionally visited Newfoundland, whence they fetched wood<sup>2</sup>. But their standing in these southern regions was probably one of contest. So long as the region in question has been visited by Europeans the Abenakis have made war on the Eskimo; but even if the former have been the last to

<sup>1</sup> A. S. PACKARD, II, p. 69.

<sup>2</sup> A. S. PACKARD, I, pp. 245, 252, 257, etc.

immigrate, the Eskimo have probably met other inhabitants about the Gulf of St. Lawrence. Thus, there are several indications of the Beothuk tribe being the residue of a people which has been supplanted by the Eskimo and the Abenakis and has possibly had a wider distribution.

Although the southern part of Labrador had already been visited by **CARTIER**, and although **CABOT** in 1498 had seen the northern part from Hudson Strait, **DAVIS**, as a result of his voyage in 1586, was the first to give a detailed account of the country. In the 17th and 18th centuries there had been a kind of commercial intercourse between the Eskimo and the European fishermen and seal hunters, but it often led to hostility and reciprocal deeds of violence. **CARTWRIGHT**<sup>1</sup>, who himself traded with the Eskimo, says that the Eskimo Indians have always been regarded as the most savage tribe in the whole of the American continent, and he gives instances of their murders and robberies. Not until the Moravian Brethren had begun their missionary work did more peaceful and honest trading relations gradually develop. It was in 1752 that the Moravian Brethren first visited Labrador, but not until 1771 was the first missionary station established, which did not come off without blood-shed as the Eskimo regarded it as an attempt of the dreaded fishermen to gain a footing in their country. At the present day the mission has six stations, which all lie on the north-east coast between 55° and 59° N. lat.<sup>2</sup>

Besides the Eskimo on the north coast there are, according to **L. M. TURNER**, two other groups in Labrador which are less known, of which the one lives along the south side of Hudson Strait, west of Ungava Bay, or mainly on that coast of Labrador which is situated north of 60° N. lat., while the other lives on the east side of Hudson Bay between 53° and 58° N. lat.

The Labradors possess the usual implements. The kayak is more commonly used on the sea than was the case in Cumberland Sound. During the summer, seals and White Whales are pursued from kayaks, and on these are found the usual appurtenances known from Greenland, viz., harpoon and floats, lances and bird darts<sup>3</sup>. On journeys the umiak is used; it has not become a woman's boat to so great an extent as it has in Greenland. During winter, travelling is facilitated by the use of snow shoes and dog sledges, and, judging from **TURNER**'s and **PACKARD**'s descriptions, the dog sledges are more especially used for travelling on the frozen waters of the interior than on the sea ice. As regards dwellings, according to **TURNER**, the heathen Eskimo who live at Ungava Bay use only tents and snow houses. Winter houses with stone walls and roofs of timber, the ruins of which are found in several places, are no longer used. In 1777, at the Nain of today, **CRANZ**<sup>4</sup> is said to have seen a meeting house, a large snow house, which had a

<sup>1</sup> **CARTWRIGHT**, p. 1 sqq.

<sup>2</sup> **A. S. PACKARD**, I, p. 275.

<sup>3</sup> **L. M. TURNER**, I, pp. 235 sqq.

<sup>4</sup> According to **A. S. PACKARD**, I, p. 254.

height of above 4 metres and an under surface of 6·5 metres square. The real time for hunting is the summer half of the year, or, to put it more exactly, the period from May to December<sup>1</sup>. During these months the Eskimo families live scattered on different hunting grounds. When, in the spring, the time for the breaking up of the ice approaches, the tent, umiak and kayak are packed on the dog sledge, and brought to the outermost skerries. If the ice outside these is not broken up, the men hunt reindeer, hares and other game on land, and afterwards carry on seal hunting from the kayak; while the women and children collect eggs. Towards the end of June, according to KOCH, and after June 25th, according to TURNER, the seals, which have been wandering northwards, are less numerous. Now the whole family sails again to the mainland and settles down at the various rivers to carry on salmon fishing during July and August. Then comes the time for going inland to hunt from the kayak the reindeer swimming in herds across the rivers. This hunting is continued until the rutting season has begun and the males have become lean. The season is now so far advanced that ice has already begun to form along the sea coast, and it is necessary to resort to the coast before the running water freezes. At the sea coast, where they settle down for the winter, they live for a time on the deposited meat of the reindeer, and of the small game which is caught in traps, until the ice-covering on the fresh waters is strong enough to enable them to fetch on dog-sledges all the spoil of the reindeer hunt. Consequently, from November to May, they live at the winter settlements, as regards the Moravian-Brethren-Eskimo this means the missionary station. At this period, while the sea is still open, seal hunting is first carried on from a kayak, while afterwards, when the ice begins to form, the seals and White Whales enclosed in openings in the ice are hunted, or nets are set, and still later, net-hunting ceases and hunting on ice is carried on. But ice-hunting is evidently of comparatively slight importance in Labrador. Here the most profitable methods of hunting are seal and White-Whale hunting from a kayak, and the autumn-hunting of reindeer.

### The Polar Eskimo.

We are here using the name Polar Eskimo, a name prevalent in Danish literature, to indicate a small group of Eskimo, numbering about 200 souls, who live on the north-west coast of Greenland between 76° and 79° N. lat. This the northernmost group of all the inhabitants of the earth, was discovered by JOHN ROSS in 1818, and in the following century they had for a long time only very irregular intercourse with the white race. But from 1891 to 1909 during which time PEARY undertook his famous expeditions

<sup>1</sup> H. R. KOCH, pp. 160 sqq.; TURNER, I, pp. 202 sqq.

and made lengthy sojourns among the Polar Eskimo, they came into more regular connection with civilization and its products, of which they had special use for wood, and, besides, quickly learned to appreciate firearms. It was just in the latter year — 1909 — that the Danish Eskimo-explorer, KNUD RASMUSSEN, who, even during the years 1903—1904, had together with L. MYLIUS-ERICHSEN lived among the Polar Eskimo, began a series of new expeditions to these regions, and along with this some undertakings for the benefit of this small tribe. Thus, in 1909 KNUD RASMUSSEN conducted the establishment of a missionary station near North Star Bay, and later on a trading station was founded, likewise under his auspices, at Umanark near Wolstenholm Sound. These events and undertakings have been instrumental in greatly improving the conditions pertaining to the means of subsistence of the Polar Eskimo, as in their Polar Bear and fox skins they have products which insure them no small purchasing power.

Notwithstanding this, the economic culture of the Eskimo has altered but slightly, and at any rate it is yet easy to form an opinion of the tribe's original conditions of life and economic culture in the course of the year. I have lately treated this question in M. o. G., Vol. 34, (Contributions to the Ethnology and Anthropogeography of the Polar Eskimo, pp. 268 sqq.), to which the reader is referred for fuller notes on the subject; here it will suffice to give a brief survey.

What strikes us as most peculiar as regards the geography of these northern regions is their long summer-day and their unbroken winter-night, each of about equal duration. In the regions near Cape York the winter-night lasts about 102 days; or to the 11th of February. This circumstance does not, however, play such a direct rôle in the Eskimo culture as might be expected. In these high latitudes it is the smooth ice-sheet of winter which is also one of the most important and stipulating factors. Therefore it is, also, that an Arctic Eskimo tribe has been able to settle on the east side of the Smith-Sound passage, and not on the west side, filled with masses of Arctic ice coming from the north. On the east side there are the two large indentations, Inglefield Gulf and Wolstenholm Sound, and it is inside the groups of islands situated at their mouths that the smooth winter-ice has free opportunity to form. The summer, or the season of the year when there is open water, lasts only 3 months, while the winter with its ice-sheet on the fjords, and especially on the stretches of sea situated inside the islands at the mouths of Inglefield Gulf and Wolstenholm Sound, lasts 9 months of the year. There is an immense difference between the economic life of the Eskimo in the summer and in the winter; but the locating of their settlements is somewhat similar. The Polar Eskimo pitches his summer tent more or less in the same favourable locality where he or his kinsmen have their winter-houses.

Nowadays their chief summer occupations are whale hunting and the hunting of seals from a kayak. But previous to about 1862—63 when they

did not use the kayak, they were obliged to spend the summer near the sea-fowl cliffs, where food was easily obtainable in the form of the birds and eggs. Before the period mentioned the Polar Eskimo did not even go reindeer hunting towards autumn as part of the tribe, at any rate, does now. Even salmon-catching in rivers appear to have been forgotten. That is to say, the summer economic-culture had been reduced to the tribe's last and easiest obtainable reserve means of subsistence, viz., bird-catching along the Auk cliffs of the coast. All the other sides of the Eskimo summer-culture had gone out of use. In addition, the scarcity of wood for boats and implements has undoubtedly also played a determining rôle here.

When the sea becomes ice-covered, the walrus, white whale, and narwhal go out to the ice-free waters. Within the fjord the Ringed Seal is hunted at the breathing holes. As long as the ice is smooth and without a snow-covering, the smooth-ice method is used, the hunter being then able to run up noiselessly and harpoon the animal through the breathing hole. Afterwards the Maupok method is used throughout the winter, in the event of their not having sufficient supplies from the autumn. When the Arctic night has ended in February, and the period of light returns, the Polar Eskimo leave their winter houses and set out on their dog sledges to the best walrus-hunting grounds at the edge of the firm ice. From this time onwards they live in snow houses. The methods used for walrus hunting correspond with those used for seal hunting, only they have been adapted to suit the pursuit of the larger animal. Here attention will be drawn only to the peculiar tackle which is used to haul the animal up onto the firm ice — a surprising feature in the technical winter-culture of a tribe of which the summer-culture was so impoverished.

In addition to walrus hunting, seal hunting is also carried on during the spring months. At first spring hunting, which has also often been described from the Central Eskimo, is pursued, the object being to find the snow-burrows in which the female seals have brought forth their young. Another and more profitable method of hunting is the Utok hunting, which is now carried out with firearms. During May the ice becomes cracked, and hunting at the cracks begin. The sun is now above the horizon all day; the snow houses are no longer fit to be dwelt in and the Eskimo move into tents. The cliffs have again been taken possession of by the sea-fowl, and now, late in May and during June, bird-hunting is largely carried on; the point, especially in olden days, being to reach on dog sledges the good sea-fowl cliffs before the sea-ice breaks up.

A brief, but typical account of the annual economic cycle of the Polar Eskimo has now been given. No mention has been made of the hunting of Polar bear, fox, and hare, or of the rare excursions made for hunting musk-ox in Ellesmereland; all these things being more occasional undertakings; though the hunting of Polar bears and foxes in particular, on account of their skin, is absolutely necessary in order to provide the tribe with an adequate supply of warm clothes.

### Greenland South of Melville Bay.

The Polar Eskimo represent the most Arctic grade of Eskimo culture, in so far as they live farthest towards the north, and have been in the highest degree dependent on hunting on ice. In former days there lived here a "coastal tribe" which was dependent on aquatic mammals for its means of subsistence, but nevertheless used no kinds of water-craft, which should not, however, be understood to mean that it had never known water-craft, but that it had been possible for them to forget the use of them.

When passing along the west coast of Greenland southwards, from the long and uninhabited Melville Bay, filled with glaciers, one comes to a stretch of coast about 2,800 kilometres in length, fairly evenly populated, which proceeds in a direction approximately from north to south, from the northernmost settlement situated about  $73^{\circ}$  N. lat. to Cape Farewell situated about  $60^{\circ}$  N. lat. Along this stretch of coast the transition from the Arctic to the Subarctic climate is accomplished by degrees, and in the economic culture, likewise, a gradual change takes place from the Arctic to the Subarctic — from the predominating hunting on sea-ice to the predominating hunting from boats. In the district of Upernivik, that is in the northernmost regions, the conditions are yet more distinctly Arctic in character, while they are far from being so farthest towards the south. Even RINK, in his description of Greenland, pointed out and explained that it was possible to distinguish between a northern and a southern form of Eskimo culture in Danish West Greenland. Just as there, a boundary line must be drawn between the northern and southern form, or between the Arctic and the Subarctic economic culture, near Holsteinsborg, immediately north of the Arctic Circle, or at the southern limit for the use of the dog sledge.

In geological and geographical respects West Greenland reminds us by its predominant gneiss and granite formations, its deep branching fjords and its numerous rocky isles and ranges of skerries, of the west coast of Norway. Peculiar to Greenland, however, is the land-ice of immense dimensions which only leaves a narrow line of coast, the so called "Yderland" (maritime country), free from ice, and the great glaciers which descend from the land-ice and empty themselves into the ice-fjords, encumbering the sea with floating icebergs. On the southern part of the coast the glaciers are generally small and few in comparison with the great glaciers which descend to Disco and Umanak Bays, and to the coast near Upernivik. As a set-off, the south coast, and especially the stretch of coast along the district of Julianehaab, has the peculiarity that every spring it is blocked by "Storisen", that is, by Polar sea-ice which the East-Greenland current carries south of Cape Farewell. Thus this "Storis", of which a crowd of floes remain, as a rule, until August, when it disperses and gives place to open water, is, during a great part of the summer, a decided hindrance to navigation along the southernmost part of Greenland's west coast.

As regards climate the western side of Greenland differs considerably from those regions in Baffin Land and North America which lie on the same parallel of latitude. While the east coast of Baffin Land still has a severe Arctic and somewhat continental climate, that of West Greenland must more properly be described as a raw and inclement coast climate, which, towards the south becomes rather unsettled. A glance at the isothermal chart shows that the isotherm curves northwards along the west coast of Greenland, and that especially the January isothermal line forms a very sharp curve at the meridian of the west coast. Thus, the January isotherm of  $-20^{\circ}$  runs in North America across Lake Winnipeg and the coast of Labrador at about  $50^{\circ}$  N. lat., while in Greenland it goes over Disco.

As regards the life of the Eskimo, the important result of these climatic conditions is that the winter ice in the West Greenland fjords and bays does not remain so long as in the corresponding regions of Baffin Land. Only the three northern coast areas near Disco, Umanak, and Upernivik, are as a rule ice-bound the greater part of the year, for which reason the dog sledge is here the chief means of conveyance. In the course of October an ice-covering forms itself over the whole of Umanak Bay, which in November can be traversed by means of dog sledges; this ice-covering usually remains until June in the following year. Along the southern stretch of coast it is only in the interior, remote, parts of the fjords that one can hope for a somewhat reliable ice-covering during some months of the year, while the layer of ice out between the islands is so variable, and has so many spaces of open water, that no use can be made of it. Holsteinsborg, therefore, is the southernmost colony where the dog sledge is used, and it plays a very inferior rôle also at the south-western outlying stations of the district of Egedesminde, at Godhavn on Disco, and near the settlements in the extreme part of the Vaigat<sup>1</sup>.

Even the consideration of the conditions pertaining to climate and of the ice-formation gives ground for the occurrence of the two nuances in the Eskimo culture at the west coast of Greenland: (1) The Arctic form, where the dog sledge is used, and where hunting on ice is one of the most essential and necessary means of subsistence, and, (2) the Subarctic form where the hunters are exclusively dependent on the open sea for their livelihood. In the southern districts, therefore, the use of the small hunting-kayak has reached its highest degree of perfection -- but for travelling the large skin-boat (umiak) is always used, -- and the settlements are connected with the belt of rocky isles and skerries which are to be found along the outer coast, while the Arctic West Greenlanders live by preference at the head of the indentations, and chiefly use the sledge, both for travelling and as a means of shifting their habitation.

The conditions of communication are, however, only a single factor as regards the settlement. What is of main importance is the occurrence, and

<sup>1</sup> RINK I, Vol. 2, p. 146.

mode of living, of the aquatic mammals, so necessary for the Eskimo. Of the five essential seals, the Bearded seal, the Harbour seal, the Crested seal, the Greenland seal, and the Ringed seal, there are only two which form the Eskimo's real means of support. The Harbour seal occur scattered, and a few only are killed<sup>1</sup>. The Bearded seal also occur in small numbers, and appear to be hunted chiefly at the south-west coast: it is of some importance, however, as its skin is in great demand on account of its durability<sup>2</sup>. The Crested seal is connected with the "Storis" and arrives only at certain seasons of the year. The hunting of the Crested seal is of importance in the district of Julianehaab, where, according to RINK, it constitutes about one-third of the profits of the year<sup>3</sup>. Then there are the Ringed seal and the Greenland seal, which form the basis of the Eskimo existence: the Ringed seal in the north, and the Greenland seal in the south. Even FABRICIUS<sup>4</sup> reports that the Ringed seal is most numerous in Disco Bay, Umanak Bay and in those northern fjords which are frozen over during the greater part of the year. RYBERG<sup>5</sup> writes, respecting the Ringed seal, that it is the one which is chiefly hunted in North Greenland. It is present in great numbers during the winter-time proper, and may be caught anywhere along the coast, and in the fjords. In South Greenland, also, it is present practically all the year round, but here it is not of the same importance to the community.

As regards the hunting of seals the difference between north and south Greenland must not be sought in the circumstance that south of the district of Holsteinsborg new methods appear, but in the fact that some of the hunting methods from North Greenland cease to be used. The common method of hunting from a kayak with harpoon and throwing board is followed everywhere on the west coast; but while in North Greenland it can be practised only during a short time of the year, it is, so to speak, the only method which in South Greenland yields a considerable return. It is probable, partly, that this method was the only one originally used by the Eskimo for hunting Greenland Seals, and, partly, that the want of winter-ice in the southern regions has resulted in it here being impossible to employ the methods of hunting on ice. Consequently, the conditions are far more difficult in southern, than in northern Greenland, the hunting from a kayak in the open, stormy sea being subject to far greater casualties than is the hunting on ice. Failure to capture is far more frequent, and as the animal chiefly hunted, the Greenland Seal, is a migratory animal which in the course of the year twice leaves the coast, the inhabitants must be more provident than their country-men in the north, in whose waters

<sup>1</sup> WINGE, pp. 427 sqq.

<sup>2</sup> WINGE, p. 423; FABRICIUS, IV, pp. 143 and 151.

<sup>3</sup> RYBERG, p. 88; RINK I, Vol. 3, p. 187; WINGE, p. 449; FABRICIUS, IV, p. 130.

<sup>4</sup> FABRICIUS, IV, p. 82.

<sup>5</sup> RYBERG, p. 88.

the Ringed Seal lives all the year round. A kind of transition from hunting from kayaks in the open sea to hunting on ice is brought about by the hunting from ice-edges in places kept open by currents, from openings in the ice caused by the movements of an enclosed iceberg, or from the cracks made in the winter-ice by the calving glaciers. The latter mode of hunting is practised especially in early winter. The hunter always takes his kayak with him in order, if need be, to fetch back the animal harpooned or shot. This method is also used in the case of enclosed shoals of White Whales which have resorted to the nearest opening in the ice. If the ice forms during autumn with a glassy surface, which, however, is not the case every year, and then as a rule only in Umanak Bay, hunting on smooth-ice can be practised. In the winter-time proper, when the sea is quite frozen over and the ice is snow-covered, Maupok hunting is carried on, and in spring the seals which come up on the ice are hunted (Utok hunting).

Yet another method of hunting was formerly followed in the northern part of West Greenland, but even in RINK's time it was of very slight importance. Since then it has not become quite extinct, but it is used only rarely. In East Greenland near Angmagsalik GUSTAV HOLM found it still in use in 1884. According to the description given by HOLM, first two holes are made through the ice, the one two feet in diameter, and the other just large enough to allow the harpoon shaft to pass through it. Two men take part in this mode of hunting; one of them lies down on the ice and peeps through the large hole, after he has so covered his head that his sight can better penetrate the water. This man guides the long harpoon shaft, which is held down in the water by the man who is standing upright with the harpoon shaft in his right hand and the hunting line in his left. "In order to entice the seals there are fixed close to the head two pieces of bone, carved in the form of seals, which vibrate on cut feather-bags. As soon as the seal comes under the harpoon, and the right moment has come, the man on the lookout shouts 'kae', and the other man makes a rapid thrust". This mode of hunting is called *ituarpok*<sup>1</sup>.

This last method is undoubtedly a very old Arctic-Eskimo method of hunting, which in practice, however, has not been able to compete with the Maupok method, because it required two men, whereas the Maupok method can be practised by a single hunter, who either operates quite alone or makes use of a dog to scent out the breathing holes. But the method is of interest on account of its original character.

How the methods of hunting seals — so few in number — have been altered in our own days, and especially after the rifle came into general use is not of much concern in this connection<sup>2</sup>. Likewise it will suffice to point

<sup>1</sup> M. o. G., Vol. 39, p. 57. Cf. PORSILD, pp. 133—134.

<sup>2</sup> As regards some new contrivances which the introduction of firearms has necessitated, for instance the kayak rudder, the rifle bag, and the shooting screen, the reader is referred to M. o. G., Vol. 50, pp. 135 sqq., where I have shown that the shooting screen for the kayak was probably first used in

out that the catching of seals in nets is now frequently preferred to the laborious old methods. It must be taken for granted that the present greater employment of nets is due to Danish influence and the use of Danish nets; but it is nevertheless probable that the Greenlanders, even before the Danish time, caught seals in nets made of whalebone.

The two smaller whales which always have been of great importance to the Greenlanders are the White Whale and the Narwhal. Both occur rarely in South Greenland, while in the northern bays they are of considerable importance<sup>1</sup>. During summer they are hunted from kayaks in the same way as the larger species of seal. The same applies to the small dolphins and porpoises, provided the hunter seizes his opportunity, because they are usually too wary. The hunting of the great *Balaenoidea*, such as the Greenland whale and the Rorqual whale has now ceased, and the method has been forgotten. In former times it was carried on with great profit in the intermediate part of the coast around Holsteinborg, or in the same districts where, afterwards, the Danes carried on whale hunting<sup>2</sup>. From ANGMAGSALIK G. HOLM, and afterwards THALBITZER, have collected many evidences of the fact that whale hunting has there been practised after the same method as on the west coast<sup>3</sup>.

H. EGEDE, O. FABRICIUS and H. C. GLAHN<sup>4</sup> have described the whale hunting of the West Greenlanders and the customs pertaining to it. Usually it was carried on jointly by 2—3 umiaks manned by 10—12 men. FABRICIUS writes that, in the first place, the bottom of the boat had a layer of inflated seal-bladders "to prevent it from sinking". The method consisted, for the rest, in the hunter creeping in upon the whale, harpooning it, and afterwards approaching the emerging animal and thrusting into it a new harpoon with line and bladder-float. If the whale is killed and floats upon the water the hunters flense it, dressed in their so called "Springpels" ("cutting out" clothing) which comprises skin jacket, trousers and boots in one, and is so constructed that it can be drawn tight under the chin and at the wrists. Through a hole in the front the hunter creeps into it and then the "Springpels" is inflated with air and all the openings are laced up<sup>5</sup>.

The customs observed with this method of hunting, and the rules according to which the spoil is divided among the hunters and the chance-partakers in the hunt, remind one strongly of the conditions among the

Disco Bay during the "seventies" of the 19th century, that the rifle bag for the kayak was undoubtedly used for the first time in 1870 in Umanak Bay, and that the kayak rudder was invented in 1868 by a seal-hunter, JENS REIMER, who lived in Jakobshavn in Disco Bay.

<sup>1</sup> RINK, I, Vol. I, pp. 85 and 100; Vol. 2, p. 210. RYBERG, p. 89.

<sup>2</sup> RINK, I, Vol. 3, p. 207.

<sup>3</sup> M. o. G., Vol. 39, pp. 56 and 403.

<sup>4</sup> GLAHN, pp. 273 sqq.

<sup>5</sup> A "Springpels" is found in the National Museum in Copenhagen.

West Greenlanders, and especially, among the Eskimo around Point Barrow. In Greenland the whale hunting was the only occasion when men would condescend to row the umiak. H. C. GLAHN writes "Even then they do not row with the umiak oars, or with their backs to the bow, but with small hand-paddles, and with their faces turned to the fore end of the boat"<sup>1</sup>. This record provides, in addition, the important ethnographical information that the umiaks, as commonly used, were not propelled with paddles, but were rowed with heavy oars, as was the case, for instance, at Point Barrow. Sails were also used on the umiaks.

The region north of Holsteinsborg, where it so happens that the west-ice, or the westerly ice-laden current of Davis Strait, strikes against the land, is, moreover, the only place on the west coast of Greenland where the walruses occur in great abundance. With the Eskimo, however, walrus hunting has only played an occasional rôle, similar to that of the Polar-bear hunting, which is only carried on at the northernmost and southernmost parts of the west coast.

When mentioning seal hunting one mentions the Greenlander's chief means of subsistence, and the means which provides the community with food, clothes, covering for tents and boats, and fuel. With the Greenlanders seal hunting ranks as the work of a man, and that from which he acquires honour by carrying it out to perfection. The only hunting which, in the heart of the Eskimo, has been able to compete with seal hunting, and even to out-do it, is reindeer hunting. Even CRANZ<sup>2</sup> observed that reindeer meat was their favourite food, which they obtained, however, in such comparatively small quantities that almost all of it was consumed during the chase. This is verified by LARS DALAGER<sup>3</sup> from the district near Godthaab, where the reindeer is the animal chiefly hunted, "to get which a Greenlander sets all else aside". Nowadays reindeer hunting is only a mere ghost of what it used to be in former days. Reindeer are still to be found in several places in North and South Greenland, but only in small numbers, the herds having diminished greatly, after the introduction of firearms. It has become quite extinct in the district of Junianehaab, although the Eskimo, as late as the beginning of the 18th century, there carried on the hunting of reindeer to a considerable extent. It was found there, also, in the time of the Norse men, and in the Sagas there is mention of an island where it could be hunted only by permission of the bishop. Even in the first half of the 18th century the hunting of reindeer played an important and regular rôle with the Eskimo; as every summer they dispersed inland for the purpose of hunting. And the inhabitants of the southern part of the coast travelled in their umiaks up to the region around Godthaab to take part in the hunt. The first missionaries objected very much, however, to this hunting;

<sup>1</sup> GLAHN, p. 279.

<sup>2</sup> CRANZ, Vol. I, p. 189.

<sup>3</sup> DALAGER, p. 19.

because, for a time, it took the Eskimo beyond their influence, and they frequently forgot the morals impressed on them in the course of the winter. Consequently, the missionaries tried with all their power to prevent it, and in the course of time the diminution of the reindeer showed itself to be their best ally, so that at any rate the long journeys outside particular districts have now ceased. As regards the methods of hunting reindeer, very little has been recorded. Bows and arrows were used, but were comparatively soon replaced by firearms. The oldest description of reindeer hunting is due to H. EGEDE<sup>1</sup>; he writes that they "chase them [i. e. the reindeer] by Clap-hunting, setting upon them on all sides and surrounding them with all their Women and Children to force them into Defiles and Narrow Passages, where the Men armed lay in wait for them and kill them. And when they have not People enough to surround them, then they put up white Poles (to make up the number that is wanted) with Pieces of Turf to head them, which frightens the Deer and hinders it from escaping."

In the accompanying illustration the women are seen driving some reindeer between two converging rows of stakes towards a pass, where the men are lying in wait with their bows. The method of driving the reindeer herds into a lake or fjord, or that of lying in wait for them at fords or swimming places, whereat to kill them from a kayak has also been employed, and is mentioned in the literature<sup>2</sup>. The word "*Nettoarsuk*", which signifies a place where to swim, and is known from some localities, probably dates from the times when this method of hunting was employed.

Neither with the hunting of aquatic mammals or with the hunting of reindeer did fishing play its co-ordinate rôle. The food which fishing supplies to the Eskimo has always served them only as a reserve food in times of need, or also a supplementary means of livelihood. The introduction of better European methods of fishing and fishing implements has not been able to effect any changes in this respect.

The catching of salmon in fresh water is carried on with three-pronged salmon spears in the open streams during summer. But the art of building dams, which the salmon pass over during flood-tide, but behind they are retained during ebb-tide, thus becoming an easy prey, was also understood. While fresh-water fishing was homogeneous everywhere in Greenland, sea-fishing differed in North and South Greenland, as "*Angmagsætten*", or the capelin, which is of real importance in South Greenland owing to its great abundance, is not caught further north than Disco Bay. The method of fishing is simple, the capelin, which goes in shoals, close in-shore being scooped up with a catcher. This fishing takes place during spring. In the north other kinds of salt-water fish were as a rule caught through holes in the ice, either with a line of whalebone, or with a line from the skin of the Bearded Seal.

<sup>1</sup> H. EGEDE, III, p. 62; cf. I, pp. 33 sqq. and 43.

<sup>2</sup> Cf. H. EGEDE, p. 33; FABRICIUS, I, p. 239.

The hunting of birds did not have, and could not have had the same importance for the West Greenland Eskimo as for the Polar Eskimo. Seafowl cliffs so rich in birds and so easily accessible as those up there are not found along the southern part of the west coast. Just as in Subarctic Alaska, so in Subarctic West Greenland, is the Auk hunted for preference from a kayak, with the aid of a throwing missile, the so-called bird-dart.

The principal features of the economic culture in West Greenland have now been mentioned, especially as evidenced in the writings of the oldest authors from the first days of the Danish colonisation in the 18th century. Even if we have no real knowledge of the West Greenlanders previous to the time when they came into contact with the Europeans, yet we may safely conclude as regards their original culture that it has differed from that of the Polar Eskimo by becoming more and more Subarctic the further we proceed southwards. The summer side of the economic culture has steadily increased in importance, while at the same time the winter side has decreased.

Owing to this adaptation, great claims have been made on the development of water-craft in particular, and in this respect the country has supplied a sufficient amount of the material which, next to the skins, was an indispensable necessity, viz., wood. The conditions pertaining to ocean currents permit the fairly even distribution of drift-wood along the whole coast, decreasing, however, northwards, as far as the regions near Upernivik, where it occurs only sparingly. In Subarctic West Greenland the abundance of drift-wood has even rendered possible the coming into existence of the large, oblong winter-houses for several families — a form of house which, however, in its structure is distinctly reminiscent of the small winter-house built of stone and whales' bones, which is still used, for instance, among the Polar Eskimo (Cf. M. o. G., Vol. 34, pp. 311 sqq., where I have shown and illustrated how the Subarctic Greenlanders' large houses with their family compartments probably must be imagined to have originated).

With the landing of HANS EGEDE at Godthaab in 1721 begins the Danish colonial rule in Greenland. After some trials the Danes succeeded, even as early as in the 18th century, in creating a system of government which considered the material as well as the spiritual and the moral welfare of a primitive people like the Greenland Eskimo. The system has, on the whole, proved to be excellently adapted to the prevailing conditions and has stood its test to this day. One fact which provides evidence of the excellence of the Danish guardianship is that the population has during the last century increased greatly in numbers.

Naturally, the original indigenous Eskimo culture has hereby been greatly modified, and the conditions pertaining to economic culture met with at the present time in Danish West Greenland can only in a slight degree be designated useful scientific material for us, whose object in our investigations just is to find the original conditions.

As regards certain essential points there is, however, constant agreement between past and present. Thus, in the fact that the northern West Greenlanders with an Arctic degree of culture live for preference within the fjords and bays where the winter-ice is permitted to remain unbroken by wind and current the longest possible part of the year, while the southern West Greenlanders with a Subarctic nuance of culture have as strong a bent in the direction of the open sea and the outer coasts. It accords with the constant validity of this point of adaptation that the annual economic cycle is in reality also the same in the different places as in olden days, even if some of the old methods have been replaced with newer ones, showing European influence. Here will be given a few examples of annual economic cycles at Arctic and Subarctic settlements. At the settlement of Umanak at the head of Umanak fjord, Arctic conditions prevail. An ice-covering is formed late in autumn, and from about the middle of December it remains fixed and unbroken. Then was the period for Maupok hunting, but this method plays a very subordinate part here, having been replaced by "ice-net-hunting". During January, February and March "Ice-net-hunting" of seals is continued. In April Utok hunting becomes predominant, and remains so during May and the greater part of June, till the ice breaks up, which generally happens about the 18th—20th of June. When the ice is gone the hunting from kayaks begins and is continued until the sea again is ice-covered.

It is true that the small Hunde Islands south of Disco Island are situated somewhat north of the Arctic circle, but on account of their oceanic situation in the mouth of Disco Bay they have an ice-covering of shorter duration than have localities situated within Disco Bay and in the same parallel of latitude, and the economic life attains a character which is in a transitional stage to the Subarctic life. About nine months of the year, or from April to December, the sea is open, at any rate so much so that hunting is carried on from kayaks. In January, February and March there is ice on the sea, but the ice-covering is partly unreliable as it can break up at any time and drift away seawards, partly intersected with cracks and with openings caused by currents. Therefore Maupok hunting cannot be pursued; but seals may be hunted from ice edges along cracks and openings; the hunters must always take the kayak along with them, to cross the open places or to row to land, should the ice drift seawards. Utok hunting is, however, of importance in early spring. In June and July some members of the settlement travel into the district of Holsteinsborg or into Disco Bay for the purpose of hunting and fishing — it is in West Greenland one of the few remains of the old Eskimo summer-moves.

South of Holsteinsborg the Subarctic economic culture appears in a still more decided form. As a rule, the hunting is carried on all the year round from kayaks, and the methods of hunting on ice are not employed owing to the absence of an ice-covering. The settlements have been moved out to the mouths of the fjords on account of the open water; within a

few of the fjords a few small settlements only are found, for instance in Godthaabsfjord, and in such places the ice may be of some importance as regards livelihood. The annual economic cycle in South Greenland is, therefore, more simple than is the case in North Greenland, and it is especially the case nowadays when the original yearly summer journeys to hunting and fishing grounds further inland in the coast country have been discontinued, barring a few slight rudimentary instances.

The changes in the annual economic cycle, which can be demonstrated in South Greenland, are therefore not so closely connected with the essential changes in the geographical medium as with changes in the occurrence of animals to be hunted, occasioned by the migrations of the various aquatic mammals, the migratory flight of the birds, and the seasonal changes in regard to abundance of fish. From Holsteinsborg to somewhat south of the district of Godthaab, a series of settlements is found, situated furthest out in the Bay, the inhabitants of which, owing to their being able to hunt on the sea all the year round, have developed the use of the kayak to the highest perfection in Greenland. It would be natural to expect to find the most decidedly Subarctic nuances of culture on the southern part of the west coast of Greenland, near Julianehaab; but here the occurrence of the Polar sea-ice ("Storis") can to a certain degree impart an Arctic colouring to the character of the economic culture. But, nevertheless, the economic culture at Julianehaab is decidedly Subarctic.

This is, however, not the case at the only inhabited area of the east coast, round Angmagsalik and Sermilik fjords, which is situated in  $65^{\circ}$ — $66^{\circ}$  N. lat. At these fjords and their numerous arms lives a small group of Eskimo, the Angmagsaliks, who were discovered in 1884 by the Danish Konebaads Expedition under G. HOLM; they numbered at that time upwards of 500 souls. Here the geographical conditions are more Arctic in character than is the case on the west coast on the same parallel of latitude. Not only are the outer coasts blocked during part of the year by the "Storis", but in the fjords, also, the winter ice forms barriers; during Holm's wintering, 1884—1885, the barriers were formed in the middle of January and broke up again in the middle of March. The supply of drift-wood is considerable. The Marine fauna in its main features is the same as on the west coast. Reindeer, hares and musk-ox had lived at Angmagsalik, but had disappeared even before 1884. Therefore, the Angmagsaliks are wholly dependent on the sea for their means of subsistence. During summer and autumn they hunt from kayaks. During winter Maupok hunting is carried on, and the Ituarpok hunting described above; during spring Utok hunting is practised. In former times, or probably until the beginning of the 19th century, whale hunting from umiaks was carried on.

Consequently, it is seen both from the geographical conditions and from the cultural features corresponding to them, that the Eskimo culture at Angmagsalik agrees most closely with the conditions on the west side of Disco Bay, or with those of the regions which are situated where the transition

from Arctic to Subarctic takes place. Seen from a purely cultural standpoint, this is evident from the fact that both umiaks and dog sledges are used. The fact of the dog sledge suddenly making its appearance at Angmagsalik after having been absent from the whole of South Greenland could, perhaps, in addition to other ethnographical features, be urged in favour of the opinion which was first pronounced by G. HOLM, and has since been supported by the observations of later authors (C. H. RYDER, G. AMDRUP and W. THALBITZER), that the Angmagsalik Eskimo consist of a mixture of elements, some of which came from the south and some from the north, and consequently have passed along the north and north-east coasts of Greenland. It should, however, be mentioned that the groups had not been entirely outside the sphere of European influence before HOLM's visit in 1884, and before the establishment of the Danish missionary and trading stations in 1894; thus, even before 1884, the Angmagsalik Eskimo had obtained iron through their journeys to the eastern part of the west coast.

Consequently, even Angmagsalik did not in HOLM's time (1884) represent the most original Eskimo conditions in Greenland. These conditions, especially with regard to the annual economic cycle along the various stretches of coasts from Melville Bay in the north and around Cape Farewell to Angmagsalik and further to the extinct groups at Scoresby Sound and Franz Joseph fjord, it has hitherto been impossible to describe except in their more common features.

During later years, however, considerable work has been done, especially by Danish investigators, as regards the ethnographical exploration of Greenland. The majority of the works on the subject have been published in M. o. G. One of the works published elsewhere should, however, be noticed here; it is the Norwegian ethnographer O. SOLBERG's important work "Beiträge zur Vorgeschichte der Osteskimo." In M. o. G. W. THALBITZER has published a new edition of HOLM's excellent and valuable memoir of 1888, and his own extensive descriptions and studies based on ethnographical collections from East Greenland made by G. HOLM, G. AMDRUP and J. PETERSEN. From the northern part of the east coast C. BENDIX THOSTRUP has given an account of the ethnographical results of the Danmark Expedition. From the west coast there has quite recently been published M. PORSILD's studies of the material culture of the Eskimo. The author, who is in command of the scientific Danish Arctic station of Disco, is a botanist, and it was the fact of his having had an opportunity of living closely associated with the Eskimo that led him on to make ethnographical observations.

Among the points of interest, particularly as regards economic culture, which appear from these studies, two points will especially be considered here. The first is, that whale hunting has played a prominent part not only at the west coast of Greenland and at Angmagsalik<sup>1</sup>, but also along the northern part of the east coast, or the districts between Scoresby Sound

<sup>1</sup> G. HOLM and THALBITZER, M. o. G., Vol. 39, pp. 56 and 403.

and Danmarks fjord, whence the Eskimo have now disappeared. This is evident from the whales' bones and baleen found by the Danmark Expedition, and from the use the Eskimo had made of these articles<sup>1</sup>. There also appears to be evidence of the Eskimo in these regions having used the umiak<sup>2</sup>.

The second point of special interest for us is the capture of seals with nets. As regards the employment of this method in Greenland I wrote in 1905 as follows: "In 1857 RINK<sup>3</sup> as a matter of course took it for granted that net-catching had been introduced into Greenland by Europeans, but afterwards he arrived at another opinion, which he communicated to JOHN MURDOCH<sup>4</sup> in a letter. In this he writes: "Small ice nets are extensively used in North Greenland, and, what is strange, they are set exactly in the same manner as at Point Barrow". RINK mentions, further, that nets are mentioned in tales, and that in the Ethnographic Museum in Copenhagen there is an "ice-net" of whalebone which "according to report is said to be one of those which in olden days were used by the Greenlanders". This net was, however, delivered to the museum as late as in 1843, and came from Julianehaab, consequently from a locality where neither whale hunting nor seal hunting on ice was carried on, but where at the present time net-catching is carried on with Danish nets. Consequently, there is some probability of its being an "ice net", as RINK<sup>5</sup> calls it. Perhaps it has been used to catch seals in fjords. A remark made by LARS DALAGER in 1752 may be indicative of this: "Southwards in the country the Greenlanders use the majority of the whalebone, of which however they have not one among them, but must fetch them from Disco Bay." Another probability is, however, that the net of whalebone strings from Julianehaab has its origin in quite another place. In a report from 1856 HOLBØLL states that about 20 years ago a net of whalebone is said to have been found hanging on an iceberg near Julianehaab which "indicates that there are Greenlanders still living who have no knowledge of hemp yarn, and to whom, in consequence, Europeans, probably, are also quite unknown." In the same place HOLBØLL records, that Greenlanders have tales of whalebone nets having been used before the arrival of the Europeans. I think it can be stated with fairly great certainty that in 1843 whalebone nets were not made and used near Julianehaab; but in this case it becomes somewhat probable that the net preserved in the museum and the one HOLBØLL mentions are identical, and if this is the case, the net presents the further interest that it must originally have come from East Greenland where, according to HOLM<sup>6</sup>, whalebone nets were formerly used, and from there it must have

<sup>1</sup> THOstrup, p. 336.

<sup>2</sup> THOstrup, p. 239.

<sup>3</sup> RINK, I, Vol. 3, p. 200.

<sup>4</sup> MURDOCH, IV, p. 333.

<sup>5</sup> RINK, XIII, p. 212.

<sup>6</sup> M. o. G., Vol. 39, pp. 51 sqq. Cf. THALBITZER, p. 402.

been carried by the Polar sea-ice (Storis) south of Cape Farewell." There can scarcely be any doubt as to the correctness of the hypothesis here expounded by me that the net originated from the east coast (Angmagsalik).

As regards the use of the net in question in West Greenland I shall further draw attention to the peculiar remark made by JOHN DAVIS<sup>1</sup> "They make nets to take their fish of the finne of a whale". Recently a net of whalebone was found in Disco Bay north of Jacobshavn, regarding which the reader is referred to PORSILD<sup>2</sup>, who has made the net-question a subject for further inquiry.

That other eastern Eskimo, besides the Greenlanders, also have carried on net-catching appears to be proved by the fact that PARRY<sup>3</sup> found a net of whalebone in 1821 at a deserted settlement in Lyon Inlet. Lastly, it may be mentioned that DOBBS speaks<sup>4</sup> of a net of whalebone among the Eskimo on the west coast of Hudson Bay between 62° and 65° N. lat.

### The Eskimo of the Melville Peninsula<sup>5</sup>.

In the preceding chapter on the Baffin Land Eskimo it was essentially the groups in the south-eastern parts of the large island studied by BOAS which were taken into consideration. Round about this island, however, there appears to be several other, though less important, centres for Eskimo settlements. Thus, towards the north, by the sea within Bylot Island, where lives a group which is undoubtedly closely connected with the Eskimo who live at Fury and Hecla Strait, which separates Baffin Land from the Melville peninsula. This group (BOAS's *Iglulirmiut*) is, however, again very closely connected with the southernmost inhabitants of the Melville peninsula, for which reason they have here been treated collectively.

Iglulik, which signifies a place where *Iglus* or houses are found, is the name given by the Eskimo to an island which is situated in the eastern part of Fury and Hecla Strait, and is their chief gathering place in these regions (69° 18' N. lat. and 81° 30'—82° W. long.). Eivillik, according to LYON, is the same as Repulse Bay, immediately south of the Arctic Circle, on the coasts and ice of which the large southern Eskimo-group of the Melville peninsula has its centre. BOAS establishes two different tribes in these places, and treats the *Iglulirmiut* and the *Eivillirmiut* separately. The geographical conditions in the two places in question agree rather closely, and so, consequently, do in some measure the economic conditions, wherefore they can here be treated collectively. The two main groups mentioned

<sup>1</sup> A. H. MARKHAM, p. 20.

<sup>2</sup> M. o. G., Vol. 51, pp. 176 sqq.

<sup>3</sup> PARRY, II, p. 100.

<sup>4</sup> DOBBS, p. 49.

<sup>5</sup> The principal works on which the description of this group is based are BOAS, II, X and XI; HALL, II; LYON, I and II; PARRY, II; RAE, I. For a fuller quotation the reader is referred to STEENSBY, I, pp. 79—86.

above have the greatest intercourse with each other reciprocally, while they but rarely come into contact with their kinsmen from the north and east coasts of Baffin Land and from Boothia. LYON found, that there were a few Eskimo only, who had not stayed at both the settlements mentioned above and at the third chief settlement of the tribe, Nuvuk or Wager River. At its winter stations at Winter Island — north of the mouth of Lyon Inlet — and at Iglulik the Expedition came into contact with almost every Eskimo between Nuvuk and Iglulik, and they were all found to be connected either by ties of blood or by marriage, wherefore Lyon has no hesitation in treating them collectively. Now and then they come into contact with more distant groups of Eskimo. Thus, we may mention the Eskimo BOAS heard tell of as living in the north-eastern part of Fox basin, the Baffinlanders from Eclipse Sound and Ponds Inlet, whither the Iglulik Eskimo travelled across the country in 10 days, and whence they now fetch some of their European goods, the inhabitants of the Boothia peninsula, and the inland tribe Kinipetu, west of Chesterfield Inlet, whom, at any rate in more recent times, they used to meet at the whaling station on the Marble Island. Regarding the Eskimo on Southampton Island who did not trade with the whalers the Eivillik Eskimo knew very little, and they appeared never to have come into contact with them. To judge from the Eskimo maps published and mentioned by PARRY and LYON, the tribe in question knew of scarcely anything but Fury and Hecla Strait and the whole of the east coast of the Melville peninsula, with its southern indentations. Of the west coast only a part was known, as it was rarely visited, because, according to Eskimo report, though there certainly were Polar bears and seals yet there were no whales or walruses. Southwards, it is difficult to decide the extent of the tribe's pristine knowledge of the country, because its members had long been in the habit of making trading journeys on the ice as far as Fort Churchill. Provided the map published by HALL, which was drawn by an Eskimo at Repulse Bay in 1865, can be taken as a standard by which to judge the tribe's geographical knowledge, then this extends from Fort Churchill to Lancaster Sound. All which lies east and west of this coast line, with the exception of Rae Isthmus, is unknown or wrongly comprehended. The fact that the coast of Greenland is found on the map indicates however the intermixture of something recollected from European maps. The area within which the tribe travels about and hunts may be defined then as including solely the east coast of the Melville peninsula from Fury and Hecla Strait to Wager River, and Rae Isthmus as far as the south-east end of Committee Bay.

The Melville peninsula, which mainly consists of a range of granite hills merging towards the east into a silurian plain, has generally a low coast, with the exception of the indentations under the Arctic Circle, where the primitive rock appears and forms higher shores. On the other hand, at Fury and Hecla Strait the limestone is predominant, and the island of Iglulik consists of a slate-like limestone, and should be regarded as "an

immense swamp full of lakes and covered with stunted herbs." The prevalent north-west wind keeps the coast fairly free from the drifting ice-masses, and the tidal difference, which according to HALL is 2 metres at Southampton Island and still greater further towards the west, causes a strong current in the narrow waters, with the result that, with the exception of an ice-belt along the land and over the indentations, there is open water in the middle of the strait during the whole, or at least the greater part, of the winter. In December 1864 HALL went 12 kilometres from land to arrive at the ice edge in Rowe's Welcome. Floating masses of ice drifted from north to south, grinding along the jagged edge of the fixed ice. Numerous walruses were seen on both sides along the ice edge; and they were eagerly hunted by the Eskimo. On the whole, the entire stretch of coast from Nuvuk to Iglulik abounds in walruses. As regards the latter region this fact has been pointed out by PARRY and LYON, and it is moreover fully borne out by the experiences of the various expeditions and by the numerous accounts of the hunting of these animals. It is only east of the Melville peninsula that they occur so abundantly; west of the peninsula they do not occur at all, according to Eskimo report; and in accounts of travels no reference is made to them from the Gulf of Boothia and Committee Bay. Of species of seal are found, in addition, the Bearded Seal and Ringed Seal in great abundance. Of whales, White Whales and Narwhals are mentioned. The two large representatives of the terrestrial fauna, the reindeer and the musk ox, play an unequal rôle as regards the Iglulirmiut and Eivillirmiut, the limit of the range of the musk ox being at about Rae Isthmus.

Regarding the Iglulirmiut PARRY says that only a few of them have taken part in the slaying of a musk ox, while all of them have killed large numbers of reindeer. In the autumn, when the ground is frozen and passable, the latter wander southwards in great quantities, and in May and June return again to the Melville peninsula in a famished and lean condition. The narrow Rae Isthmus, the bulk of which is further reduced by a transverse series of freshwater lakes, is the place resorted to by the Eivillik Eskimo for the purpose of carrying on reindeer hunting.

The fact peculiar to the mode of living of the Eivillik Eskimo is that they have access to musk-ox hunting, which is purely land-hunting, and lastly their "economic" journeys are determined by the fact of there being an uncommonly great abundance of walruses along the east side of the Melville peninsula, and in the straits between the continent and Southampton Island.

A determination of the mode of living and of the dwelling places of the tribes in the different seasons of the year must, however, have reference to the Eivillik group in particular, as this has been visited several times, and at all seasons of the year, while our knowledge of the Iglulik group is restricted to the observations of PARRY and LYON, whose ships Fury and Heela were lying in the neighbourhood of Iglulik from the summer of 1822

to the spring of 1823, and of C. F. HALL, who in 1867 and 1868 made sledge journeys from Eivillik to the Fury and Heela Strait.

PARRY and LYON were also the first to reach Repulse Bay, and to pass the winter (1821—1822) on Winter Island north of the entrance to Lyon Inlet. This expedition had gone north of Southampton Island; an attempt made by LYON in 1824 to go south of the island failed, as the ice obliged him to return from within Rowe's Welcome in  $65^{\circ} 30'$  N. lat. Dog sledges were greatly used by the succeeding expeditions. For instance by JOHN RAE, who went from Fort York northwards along the coast, and passed the winter of 1846—47 at the head of Repulse Bay in the so-called Fort Hope. This was also the head quarters of C. F. HALL during the years 1864—69, and this was the starting point for his excursions. Since then this region has scarcely been visited. SCHWATKA's route of 1879 went from Depot Island across the country to the mouth of Back River, and touched only the south-west boundary of the region. In these waters the American whalers do not go so far northwards, and this applies also to the Canadian expeditions, for instance the "Neptune", under A. P. LOW, which passed the winter of 1903—1904 in Fullerton Harbour, on the mainland side, at the south end of Rowe's Welcome.

According to RAE's and HALL's concurrent experiences the Eivilirmiuts pass August and September on Rae Isthmus, at the lakes there, where they pass the time partly in salmon-fishing, and partly in reindeer hunting from a kayak when the reindeer herds swim across the lakes and rivers. At several places on the isthmus the travellers came across fences or long rows of stones, which were set up to lead the reindeer herds into the water where the Eskimo were lying in wait with their kayaks. These fences were also observed in Fury and Heela Strait, and this method of hunting is further mentioned by PARRY. At this season they live in tents of reindeer skin. The large quantities of reindeer meat which is thus procured is set aside as supplies, and it appears that these supplies are brought to the coast of Repulse Bay, where the first part of the winter is spent. Both in the winter of 1865—1866, and in that following, HALL found that the Eskimo, when the reindeer hunting had ceased, resorted to Repulse Bay, where, during the following months, they lived on venison from their stores, and on the few salmon they caught through the openings in the ice. For the rest, the group HALL knew spent the winter of 1865—1866 in snow houses; and, in one which was particularly large, they gathered almost daily to hold festival. The reason why the Eskimo in the autumn went down to the sea with their stores was for the purpose of hunting the walrus on the frozen waters. Such autumn hunting of walruses is mentioned by HALL, who, however, adds that no hunting is carried on so long as the stores last. In 1866 these supplies probably were consumed about February 8, and in 1869 even in January, because the Eskimo then broke up to live scattered over the ice. According to RAE's observations this happened in 1847 on February 20, and this also agrees well with the fact that PARRY and LYON

in 1822, near Winter Island, were for the first time visited by the Eskimo on February 4. It appears to be certain that what determines this dispersal of the Eskimo is the amount of the supplies collected during the summer; thus, the more successful the reindeer hunting has been the longer does the winter sojourn last. When the supplies have been consumed it is necessary to resort to seal hunting on the smooth ice, or to walrus hunting, which is carried on at the ice-edge in the straits.

During February and the following months the Maupok method is the one that is mentioned. When LYON, on February 4, 1822, paid a visit to the snow houses of the recently arrived Eskimo, he found numerous evidences of seal hunting having newly been carried on, and during the time which ensued the men were either busy hunting at the seal holes or hunting walruses, if there was open water in the neighbourhood. Later on, in the spring and in the beginning of summer, they apply themselves to the hunting of seals which comes up upon the ice, and this hunting is continued until the ice breaks up in the beginning of July.

As regards walrus hunting, there is occasional mention of hunting not only during all the winter months, but also in the summer in open water. As the walrus herds found between the drifting ice-cakes are hunted both summer and winter the methods of hunting are also, on the whole, the same. During winter they must make journey on sledges to the ice-edge in the middle of the strait, taking the kayak on the sledge. During summer some of the Eskimo set out direct in their kayaks and lift these up onto a cake of ice, which they row towards the herd, after having fastened the harpoon line to the ice. When the wounded walrus is sufficiently exhausted, the Eskimo goes out in his kayak and kills it with his lance. From the ice-edge, during winter, the same method is used, or it is harpooned, killed, and drawn up on the ice by modes of procedure similar to those used by the Polar Eskimo. HALL mentions walrus-hunting during the summer season in open water at the head of Lyon Inlet, but he does not give a detailed description of the mode of hunting. Seal hunting from kayak is of little importance, and it appears, according to BOAS, that only the bladder dart is used on these occasions. With this tribe umiaks are not mentioned, and PARRY and LYON emphasize the fact that it does not occur, although the tribe knew the word "umiak", whereby it designated the English ships. The kayaks are described as small and light and are paddled with double-bladed paddles. LYON saw a kayak of which the ribs consisted of lashed together fragments of the wood of Polar willow. The almost entire want of drift-wood, and the fact that the greater part of the summer is spent near lakes and rivers, is evidently the reason why no umiaks are built. Besides, while travelling in the interior, the kayak is easier to carry, and is necessary as regards the reindeer hunting. In the case of passengers or goods having to be conveyed across a piece of water, two kayaks are lashed together, which provides a serviceable ferry-boat. The dog sledge is, however, the chief means of conveyance for travelling, and can be used during nine

months of the year. LYON mentions a sledge journey which, in 1823, was made on July 26 on the ice-foot along the island of Iglulik. As wood can but rarely be obtained, the sledge runners are for preference made from the jawbone of a whale. But specimens of runners made from frozen walrus skin are also mentioned.

The rest of the implements and the cultural objects of the tribe are only incidentally mentioned, because they have impressed the observers as being more particularly those common to the Eskimo. PARRY and LYON mention fire struck with pyrites and by drilling in wood, paddles made of fragments of wood lashed together, bows and arrows, and a peculiar form of spear for reindeer hunting in water. According to LYON and RAE these Eskimo wear deerskin clothes. At Lyon Inlet PARRY found a net of whalebone, regarding which he says that it had large open meshes, two inches in diameter, and was made of strips of whalebone lashed together with thongs of the same material. As he did not see it in use, and besides, found it at a deserted settlement, it was impossible to state whether it had been used for fishing or for the capture of the Ringed Seal. It is more probable that it was used for the latter purpose.

It appears that fishery can be carried on at all seasons and with slight trouble. LYON mentions hook-fishing in ice-holes and says that less skill is used in procuring fish than any other kind of food. On September 27, 1822, he saw two boys fish through the ice on a lake, using an ivory fish as an artificial bait. HALL observed the same method of fishing on lakes, in January 1866 and April 1863. Salmon fishing with a salmon spear in open water is recorded from Rae Isthmus in July 1847 and 1868. RAE mentions stone dams about  $\frac{1}{2}$  metre in height which are set up at the mouth of streams, slightly below high-water mark, to cut off the retreat of the salmon during the ebb of the tide. The salmon are caught with a long spear, about 2 metres in length, resembling a three-pronged fork, of which the side prongs are longer than the middle one, and are, in addition, each provided with a barb.

Four kinds of dwellings are recorded: the tent, which is sometimes said to be of reindeer skin, and sometimes of seal or walrus skin; the snow house; the house of freshwater ice, or of a combination of freshwater ice and skin, dwelt in during autumn before there is snow enough to build a snow house; and lastly the more solid winter house of stone and bone. Such a house is recorded both from Iglulik and from Repulse Bay. On a group of islets at the head of the latter bay PARRY found no less than 60 houses built of stone; the stones were laid one above the other in regular circles  $2\frac{1}{2}$  to 3 metres in diameter. At Iglulik the lower part of similar houses were built of stone, and the upper part of whale and walrus bones, which slanted inwards and met at the top. The interstices between the bones and the whole of the outer side were covered with turf, and, during winter, with snow in addition. The entrance faced south, and consisted of a passage 3 metres long and 0.6 metre high, made of flat stones, which were likewise

covered with turf. The platforms, which were raised 60 cm. from the floor, took up about one-third of the interior of the house at the back. Besides the dwelling houses, PARRY describes some small houses or chests, 1.8 metre long and 0.9 metre broad, which were used as food depots. But what is most remarkable, as regards house-building at Eivillik and Iglulik, is not the variety in construction, but the use of the permanent festival and meeting houses (*kashims*). Such houses are often considered to be peculiar to the West Eskimo, but LYON records the use of them from Iglulik, and HALL from Repulse Bay. The especially large ground-plan of a deserted house in Repulse Bay, mentioned by PARRY, is probably similar to that of a meeting house. In the meeting house observed by HALL in 1866, all the Eskimo of the village assembled daily during January and the beginning of February to hold festival until the stored up supplies were consumed. LYON believes that the house in Iglulik, where the inhabitants assembled to hold festival when a whale had been killed, or on any other joyful occasion, is a social relic from former times, and gives a short description of it (LYON I, p. 448).

In connection with what has been said above regarding the houses on the Melville peninsula it is worthy of note that similar winter houses have been found among the isolated little group of Eskimo on Southampton Island. These houses are built of stones and whales' bones, and are semi-subterranean. The ground-plan is almost circular in form and almost in the centre of this is a stone platform (about 60 cm. high), from the middle of which "a pillar built up of stone slabs rises to the roof, which is formed of jaw-bones and crown-bones of whales, which extend from the outer wall to the central support". Some of the houses have near the passage a small out-house which is used as a store house.

With the exception of an American whaler, who in 1865 is said to have met a group of Eskimo in five tents on the coast, G. F. LYON, on his voyage south of the island in August 1824, was the first to meet these people. On the south-western side ( $62^{\circ} 30' N.$  lat.,  $82^{\circ} 49' W.$  long.), about 2 kilometres from land, he met an Eskimo who, in place of a kayak, was navigating three inflated seal-skins; he sat on the middle one, and had his legs, which were provided with sealskin boots, up to his knees in the water; and was paddling with a double-bladed paddle of a whale's bone. LYON found the following implements among them: — Flint knives with bone handles, bows made of several pieces lashed together, harpoons with shafts of whale rib, cooking vessels made of thin slices of limestone very roughly cemented, and sledge runners of a whale's bone. The fact that the group which LYON met, and which consisted of about 20 individuals living in two tents, had no kayak is evidently solely due to absence of wood, and by no means to want of knowledge of kayaks as LYON thinks. All the more so as he himself found not only a piece of wood carved to represent a kayak, but in one place, also came across stone posts which are used by other Eskimos (at Eivillik and Iglulik also) to place their kayaks upon. Nor were

umiaks found, but they used the word to indicate LYON's ship. Judging from the number of bones LYON found, the reindeer appears to be their chief article of food, but he also found stores of walrus and seal blubber. Moreover, the tents were pitched along a small stream which was confined by a dam, behind which they caught salmon with a fish spear. In the same place were found, along the coast, ranges of stones which evidently served as a fence when hunting reindeer herds.

In 1898 the above-mentioned Captain COMER visited the south-west coast of Southampton Island, near the Bay of God's Mercy, and met natives who told him that about the year 1830 a group from the island had visited the mainland across Rowe's Welcome, which was at that time entirely ice-covered. In 1898 the entire population of the island numbered 58 persons. A few years later a Scottish whaling company established a station on the south coast of Southampton Island, and landed a group of Eskimo from the north side of Hudson Strait. These Eskimo, who were armed with modern rifles, destroyed the reindeer hunting to such an extent for the islanders who were armed with bows and arrows only, that these could not procure for themselves sufficient autumn hunting and winter supplies, but all died from hunger during the winter of 1902.

### Kinipetu<sup>1</sup>.

One of the most interesting Eskimo tribes is the Kinipetu Eskimo, but unfortunately it is the one which is least known. The tribe lives in the region between Chesterfield Inlet and Back River, which means that it is an inland tribe, and it is possible that originally the whole tribe did not go down to the sea-coast every winter for the purpose of hunting seals. In later years the wish to trade and to enter the service of the whalers has undoubtedly been instrumental in promoting journeys to the coast.

Their hunting and fishing grounds proper are the districts around the series of lakes which, westwards, form a continuation of Chesterfield Inlet and the group of lakes in the intermediate part of Back River. Kinipetu Eskimo have been met with both at the sea-coast and at the Lake-Garry-group. BACK, to be sure, met no members of the tribe, but he frequently came across traces of them between 101° and 102° W. long.; as for instance, several fences for reindeer hunting, fragments of a kayak and tent-rings. JAMES ANDERSON, on his journey down in July 1855, met Eskimo at the western end of Lake Pelly, and between Lake Pelly and Lake Garry. On his return journey in August he again met this group of Eskimo, which consisted of about 15 individuals. From the amount and quality of European goods found among them J. ANDERSON concluded that they must belong to the tribe which came to Hudson Bay for the purpose of trade. He found

<sup>1</sup> Principal authors consulted are: JAMES ANDERSON; BACK; BOAS, XI; GILDER; KLUTSCHAK; KING; W. PIKE. Cf. STEENSBY, I, pp. 87-88.

no sealskin among them however. They were dressed in clothes made from the skin of the reindeer and the musk ox; and, according to his statement, even their kayaks were made of reindeer skin. Both J. ANDERSON and KING are of opinion that the Eskimo whom they, with 20 years intervening, met in the district near Lake Garry belonged to a tribe that wandered about round Chesterfield Inlet. That they have not come from the north and do not belong to the Eskimo the Expedition met at the mouth of Back River is evident from what J. ANDERSON observed, viz., that the Lake-Garry-Eskimo did not possess articles from the FRANKLIN Expedition, while he found many such articles amongst the Eskimo from the North whom he met at the mouth of Back River.

It is an interesting question whether the Eskimo of whom WARBURTON PIKE, in 1889, found traces at the upper group of lakes which are part of Back River,  $65^{\circ} 20' N.$  lat. and  $107^{\circ} W.$  long., belong to Kinipetu or to a tribe which visits these districts from Bathurst Inlet. As these Eskimo have never been met with it is impossible to decide the question; but WARBURTON PIKE's observation is of importance because it shows that the "Barren Grounds" outside their interior are not entirely uninhabited, but that every large group of lakes is occupied by the Eskimo. In the region which he traversed, WARBURTON PIKE found the boundary between the Indians and the Eskimo to be Musk-ox-lake ( $64^{1/2} N.$  lat.,  $108^{1/4} W.$  long.), which is visited from the north by the Eskimo and from the south by the Red Indians. But during many years the two people had not been in contact with each other, and the Red Indians were in constant fear of meeting the Eskimo.

Besides these few scattered, and in part uncertain, notes on the Kinipetu Eskimo, we have a more accurate account of them which dates from one of the members of the SCHWATKA Expedition, WILLIAM H. GILDER, who, in February or March 1879, spent a week among them on a lake situated north-west of Marble Island, consequently, in the neighbourhood of Chesterfield Inlet. Here they dwelt in snow houses, and lived on fish and reindeer meat. GILDER says that their chief article of food is reindeer meat, just as walrus and seal meat is that of the Eivillik Eskimo. J. W. TYRRELL who has travelled around the Kinipetu territory on hunting excursions describes reindeer hunting as the favourite occupation of these Eskimo, and mentions several methods of hunting, amongst which the most important consists in luring the reindeer during their regular wanderings from north to south into a fenced-in enclosure, or out into a lake where the hunter lies in hiding with his kayak. Seal hunting, however, is also carried on, and in the spring of 1880 the SCHWATKA Expedition found them hunting seal on the ice. During GILDER's visit they were evidently yet living on the supplies from the previous summer and autumn; and every night they assembled in their meeting house, an especially large snow house which was 7.6 metres in diameter and 3.7 metres in height, and where they sang to the accompaniment of drums, or amused themselves with various games. A social pecu-

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liarity, or a custom, which otherwise is only heard of from the western Eskimo consisted in the men eating together in a snow house to which no women were allowed admittance.

During later years, as already mentioned, there has been some more intercourse with the whalers. It is Captain COMER's opinion that the southernmost Eskimo tribe on the west side of Hudson Bay is called *Sauniktumiut*, and lives to the south and west of Chesterfield Inlet. This tribe "depends almost wholly on the caribou for food and clothing, while sea-mammals are hardly used at all. They also hunt musk oxen." As regards the Kinipetu Eskimo at Chesterfield Inlet, COMER says that they, also, make little use of sea-mammals, but subsist principally on caribou and musk ox. During autumn and winter salmon are caught in the lakes with fishing-harpoons, which are handled through holes made in the ice.

### The Eskimo around Netchillik<sup>1</sup>.

The region which is here designated Netchillik is in the main identical with the islands and coasts which are situated in and around the estuary of the Back River and its continuation in Ross Strait between Boothia and King William Land, and Simpson Strait between the latter and the Adelaide Peninsula. The word Netchillik means a land where the Ringed Seal lives, and is used especially regarding a locality on the Boothia Isthmus, where, among the Eskimo, the word indicates not only the land, but also a sea and a river, and where one of the most numerous Eskimo groups of the region has its favourite place of residence. To Netchillik, in its widest sense, must in addition be reckoned the east coast of Boothia Isthmus, that district belonging to the Netchillik-Eskimo's hunting grounds. The first European to visit the region in question was JOHN ROSS, who, in his ship "Victory" passed the winter on the east coast of Boothia Isthmus, and during spring and summer in 1830 and 1831 was frequently visited by the Eskimo. In 1833 BACK came from the south along the river which now bears his name, and turned back at Point Ogle (95° W. long. and 68° N. lat.). The year after, the same point was reached by sea, from the west, by SIMPSON. In the summer of 1847 the east coast of Boothia Isthmus was visited by JOHN RAE, who had wintered at Fort Hope in Repulse Bay. In September 1846 the ships belonging to the unfortunate Franklin Expedition were beset in Victoria Strait in about 70° N. lat., and in April 1848 they were abandoned a few more minutes to the south. The officers and crew, 105 souls in all, tried along the west coast of King William Land and across Simpson Strait to reach Back River, in order to make their way along this to inhabited districts, but on the way and before reaching

<sup>1</sup> AMUNDSEN; BACK; BOAS, II and VIII; GILDER; HALL, I; KING; KLUTSCHAK; MC. CLINTOCK; C. PETERSEN; RAE, I; J. ROSS, I; SIMPSON. Cf. STEENSBY, I, pp. 89-99.

68° N. lat., they all perished of hunger, cold and disease. During the following years these regions were visited by several Search Expeditions. In the summer of 1855 the Factor of The Hudson Bay Company, JAMES ANDERSON, was sent northwards along Back River, but in the beginning of August he turned back at about the middle of the east coast of the Adelaide Peninsula, after having found several articles belonging to FRANKLIN's ships in the possession of the Eskimo at the northernmost channel of Back River, but no traces of living Europeans. MC. CLINTOCK, who had the Danish-Greenland interpreter, CARL PETERSEN, on board, sailed in 1858 into Bellot Strait, whence, in the spring of 1854, he travelled in dog sledges southwards along the west coast of Boothia, and round about King William Land, where on the west coast he found in a cairn a record written by FRANKLIN's crew. In the spring of 1866, C. F. HALL made a sledge journey from Repulse Bay, along the south coast of Boothia Gulf, to find relics of FRANKLIN's Expedition, but turned back before reaching Boothia. Only on a later journey, in the spring of 1869, did he succeed in getting as far as King William Land. In 1879 the Netchillik region was visited by the American, Lieutenant SCHWATKA, who was sent out to make thorough investigations regarding the fate of the FRANKLIN Expedition. An account of the expedition was given by his fellow-travellers, W. H. GILDER and H. W. KLUTSCHAK. Lastly, the Norwegian Gjøa Expedition under ROALD AMUNDSEN spent two years, from 1903—1905, in a bay on the south-east coast of King William Land.

The area of the Netchillik district is not so high or mountainous that its surface is anywhere covered by such immense masses of perpetual snow that calving glaciers can be formed. Nevertheless, the country consists chiefly of primitive rock, as also do the numerous smaller islands and the majority of the coasts. Groups of rocky isles occur on both sides of Boothia Isthmus and in Simpson Strait, and, in addition, granitic islets are mentioned as occurring in the estuary itself, and in Pelly Bay. According to KLUTSCHAK the east bank of the estuary is granitic, while the Point Ogle Peninsula, on the west side, is low and sandy. MC. CLINTOCK found that the west coast of Boothia, south of 71° 10' N. lat., consisted of granite, and Ross on May 31, 1830, travelled in a sledge along a granitic rocky coast on the east coast of Boothia Isthmus, which "closely resembled the Swedish coast between Gothenburg and Strömstad". Also inland, the granite protrudes along the banks of the lakes, of which there are specially many in Boothia Isthmus. According to MC. CLINTOCK's description King William Land is "extremely desolate, and its surface is studded with numerous lakes and pools."

The sea which is surrounded by these countries, and in the above has been named after Back River, but which should rather be called Netchillik Sea, is naturally covered with ice during the greater part of the year. As regards the nature of this ice, it is evident from the geographical conditions and from the experiences made by the expeditions, and also from communications imparted by Eskimo, that it is a smooth winter-ice, which

breaks up every summer and again freezes over every autumn. King William Land and the islands in the straits hinder the great masses of ice which come drifting from the north-west from entering Netchillik Sea. Mc. CLINTOCK was of opinion that if Franklin, instead of taking his ships into the pack-ice west of King William Land, had gone east of the latter "he would probably have taken them safely through to Bering Strait." And the Gjøa Expedition has shown that this route can be navigable, at any rate as regards a smaller ship.

During April—May, 1859, Mc. CLINTOCK travelled in a sledge across this lake throughout its entire length from Matty Island in Ross Strait to  $67\frac{1}{2}^{\circ}$  N. lat., and writes regarding the condition of the ice (I, p. 270): "Since our first landing upon King William's Island we have not met with any heavy ice; all along its eastern and southern shore, together with the estuary of this great river, is one vast unbroken sheet formed in the early part of last winter where *no ice previously existed.*"

Mc. CLINTOCK himself did not see the Netchillik Sea free from ice, but he learnt from the natives that this is, as a rule, the case every summer, which agrees with SIMPSON's experiences from August 1839, and with BACK's from the end of July 1833, as also with that of the Gjøa Expedition from 1903—1905.

The vegetation, which is necessarily Arctic in character, is not of much interest in this connection. With the exception of some berries it does not provide food, and only an inconsiderable quantity of wood for the use of the Eskimo. Drift-wood occurs in small quantities. Among the few cases of the occurrence of drift-wood reported by the various expeditions may be mentioned the piece, 2.7 metres in length, which BACK, according to KING, found on the east coast of the Adelaide Peninsula. The only regular supply of wood which can possibly be had must be conveyed along Back River, which undoubtedly tears off the vegetation along its banks and carries it to its mouth. This assumption agrees with what BOAS ascertained from Netchillik, that there the inhabitants got their wood from the Eskimo who lived towards the south-west.

That the Netchillik Sea is rich in Ringed Seals may be known even from the name, and this species of seal is also the only one which occurs in great abundance. Neither walruses nor walrus hunting is mentioned west of the Melville Peninsula, wherefore it may safely be concluded that neither is this animal to be met with west of Boothia. Whales and whale hunting are as little mentioned, and it is probable that these animals, on their wanderings, never, or extremely rarely, reach these out-of-the-way waters. From Bellot Strait there are records of herds of White Whales, but even if Franklin Strait now and then has open waters, which according to Mc. CLINTOCK is not the case every summer, yet in these particular years they scarcely reached so far southwards.

The land fauna is characterized both by the presence of musk ox and reindeer, of which especially the latter are important to the inhabitants on

account of their abundance and their wanderings, which wanderings, owing to geographical conditions, become highly regular. During spring the reindeer wander in herds northwards across Boothia Isthmus, and return again during autumn. From Simpson Strait there are records of wanderings over the ice to and fro between King William Land and the mainland. In August 1839 SIMPSON found the former swarming with reindeer, while MC. CLINTOCK in May 1859 came across extremely few, which gave him occasion to correct SIMPSON. The explanation may be had from KLUTSCHAK and GILDER, who in the month of June saw the reindeer wander northwards across the Strait, and, in the beginning of October, saw them return again to the mainland.

According to this description of the natural conditions of the Netchillik district there can be no doubt that there must necessarily be two focuses for Eskimo settlements, viz., Boothia Isthmus and Simpson Strait. The two tribes in question correspond to these two localities: the Netchillirmiut to Netchillik and the Ugjulirmiut to Ugjulik near Simpson Strait. The separation into these two tribes is owing to the names which the Eskimo have given themselves, but most of the expeditions found people from Netchillik and from Ugjulik living indiscriminately. BOAS is of opinion that this state of affairs was not brought about until the destruction of the FRANKLIN Expedition, when the rich booty enticed the Netchillirmiut to the west coast of King William Land, which they had not previously been in the habit of visiting. This is undoubtedly correct, previously even the Ugjulik Eskimo were not in habit of visiting the ice-blocked west coast of King William Land. This is evident from MC. CLINTOCK's observation that, north of the south-western point of the island, Cape Crozier (about  $100^{\circ}$  W. long.), all traces of the Eskimo ceased. Towards the south-west, the settlements extend along the west coast of the Adelaide Peninsula as far as about  $98^{\circ}$  W. long., where SIMPSON, coming from the west, found the traces to become frequent. Near the long Sherman Inlet, the SCHWATKA Expedition found, in September 1879, the biggest camp they had met with during the whole of their journey. On Boothia Isthmus, knowledge of the coasts extends as far as Bellot Strait, and the Netchillik Eskimo have names for the localities on the west and east coasts, even if they are rarely visited. Eastwards the Netchillik Eskimo wander only to the Simpson Peninsula, which, however, does not prevent their now and then coming into connection with the Eivillik tribe.

There is a cultural reason for considering the inhabitants at Hayes River and at the numerous rapids in the neighbourhood of the mouth of Back River separately. The occurrence of these Eskimo with their mode of livelihood is one more proof of the fact that, wherever the locality allows of it, an inland tribe is developed which lives by salmon fishing and reindeer hunting, and only makes short visits to the coast. The range of these Eskimo, BACK's Ukusiksillik and BOAS's Ukusiksalirmiut, named after the name which they gave to their country in the presence of SCHWATKA, is limited towards the south in  $66^{1/2}$ ° N. lat. by the windings of the Back River, which so rarely expand into lakes, and it is evidently they who

supplied the Netchillik Eskimo with wood and soapstone. By way of exchange they have probably obtained blubber for fuel and seal skin for kayaks.

The Netchillik Eskimo, or the inhabitants of Simpson Strait and Boothia Isthmus, spend the winter in the neighbourhood of the two localities mentioned above, and carry on seal hunting on the ice. According to ROSS, January and February were spent in this way. In the first days of March they began to disperse in all directions over the ice, in order to continue the seal hunting, and the hunting of the newly born woolly young of the seals, with greater chance of success. The Eskimo who in the beginning of January 1830 had commenced to hunt seal and to live in snow houses on the ice in the neighbourhood of ROSS's winter quarters, in the beginning of March again divided into two parties, which removed elsewhere on the ice towards north and south, and during the spring the Expedition now and then came across groups of Eskimo moving here and there. These spring wanderings may be of considerable extent. In March 1859 MC. CLINTOCK, on the ice between King William Land and the coast at the magnetic north pole, came across Eskimo who lived in eight snow houses, and had just returned home from a seal hunt on the ice. At the end of April he met another group of Eskimo who had visited Tasmanian Islands ( $71^{\circ} 4^{\prime}$  N. lat.), and who were now on their return journey to Boothia Isthmus, supporting themselves on the way by seal hunting on the ice. It appears, on the whole, from accounts of travels, that it was the spring months, which on account of the firm condition of the ice the English expeditions also regarded as most suitable for sledge expeditions, which formed the wandering period proper for the Eskimo. In April 1866 HALL met Netchillik Eskimo on the east side of the Simpson Peninsula, in Boothia Gulf, and, as mentioned above, they must now and then extend their journeys as far as Eivillik (on Rae Isthmus). But the proper field of action of the tribe during spring is the large expanse of winter ice on the Netchillik Sea, which, both as regards navigability and the presence of Ringed Seals, satisfies all their needs. On May 4th, 1859, MC. CLINTOCK found first two, and then several more, recently abandoned snow houses on Matty Island ( $95^{\circ}$  W. long.,  $69^{\circ} 2'$  N. lat.), where numerous remains of seals were lying about, and where he could gather "blubber in abundance" for his own use. From the direction indicated by the track of the sledges on which the Eskimo had departed he concluded that they had gone eastwards to Boothia Isthmus. A few days afterwards he met, on the coast of King William Land, Eskimo who were on their return journey after a visit to the wreck of FRANKLIN's ships. From the district around Simpson Strait there are extremely few observations to hand as regards this season of the year. But there can be no doubt that the numerous recently abandoned snow houses which SCHWATKA, about June 1st, came across on Montreal Island at the east coast of the Adelaide Peninsula had belonged to the Ugilulik tribe. It is true, KLUTSCHAK calls them Netchillik; but this is partly because he had not met the Eskimo

themselves and heard whence they came, and partly because both he and GILDER use the names Ugjulik and Netchillik indiscriminately. As regards the distribution of the rest of the Ugjulik Eskimo during May and the beginning of June 1879 KLUTSCHAK states that they live dispersed in small groups of two or seven families along the north and west coasts of Adelaide Peninsula, where, at this season of the year, they subsist by seal hunting and fishing. SCHWATKA places them opposite King William Land along the north coast of the Adelaide Peninsula from Montreal Island to Point Grant, north of Sherman Inlet. MC. CLINTOCK's observations from 1859 and Ross's from the years 1830 and 1831, as also the information he gained by questioning the Eskimo, show that late in spring the Netchillik Eskimo proper again gather together near Boothia Isthmus. In May and June Ross came across them living in snow houses on the ice out in Spence Bay and Josephine Bay on the west coast, and in Toms Bay on the east coast. All these bays are indentations which extend far inland, and are instrumental in narrowing the isthmus. Here the Eskimo occupied themselves partly in catching salmon and small torsk, both of which they caught through openings in the ice, and partly in seal hunting.

The Eskimo evidently have a twofold reason for gathering together near Boothia Isthmus late in spring. Firstly it is necessary, before the ice becomes rotten and difficult to traverse by means of sledges, to make for the coasts of the mainland, and there replace the Maupok hunting with the hunting of seals which come up onto the ice. There is, moreover, this particular reason for the places of gathering being on both sides of Boothia Isthmus and along the south coast of Simpson Strait, that the Eskimo must be at this particular place in order to be able to begin hunting reindeer when the latter come from the south, and to be able to begin catching salmon as soon as the fresh water becomes ice-free.

So long as the Eskimo live upon the sea-ice, or at any rate in the immediate neighbourhood of it, they always use snow houses as dwellings. In 1830 Ross saw snow houses in a fjord as late as June 1st. They were not, however, closed at the top with an arch of snow, like the snow houses proper, but were covered with skins. A week afterwards he met the group which had been living in the above-mentioned snow houses near Lake Netchillik, and there it lived in skin tents, and this was the mode of dwelling which was found to be constantly used near lakes and rivers where the Eskimo lived during the whole summer. The fishing of salmon yields rich returns. The fish is dried and stored away under stones and blocks of rock to serve as a supply for winter use. But the chief summer activity of the men is reindeer hunting, which is carried on from kayaks at such places on rivers, lakes and long, narrow fjords as the reindeer herds must swim across. Around Netchillik it is also customary by erecting rows of stones, to entice the deer into an ambush or into a lake. Such rows of stones are recorded from the south coast of King William Land and from the district around Back River. Consequently, the

Netchillik Eskimo do not disperse accidentally during summer, but take up their abode in such places where there are good conditions for reindeer hunting and salmon fishing. On Boothia the two transverse rows of lakes on the isthmus are the places mostly visited, and of the lakes, to judge from what is known, Netchillik is the one where the majority of them gather together. A narrow, river-like indentation (Skagavok) is also visited. Ross's Expedition, on its sledge journeys across the isthmus, frequently found kayaks hidden on islets, or by the banks of lakes, where they remained during the winter, covered with stones and snow. In this district, where they only resort to the sea when it is covered with ice, the umiak is never mentioned, and the kayak is only mentioned in connection with reindeer hunting in fresh waters, and as a ferry when travelling during summer. It is reported from Simpson Strait, that the Eskimo can cross the strait on a ferry made by lashing together two or more kayaks side by side. Otherwise the Uglyulik Eskimo spend the summer in reindeer hunting near the inner waters of the Adelaide Peninsula, or on King William Land. The musk ox is of less importance than the reindeer, and is hunted only casually; but it is owing to confusion when some authors have stated that its meat is not liked by the Eskimo, and that its horns and skin are not utilised. Musk-ox hunting appears to be of most importance towards Eivillik. AMUNDSEN heard from a Netchillik Eskimo, who had been staying at Eivillik, that there the Eskimo irritate the musk oxen by shooting at them with arrows, until they are roused to such fury that they rush in upon the hunters and are then killed by lance-thrusts.

The reindeer meat, like the salmon, is set aside as supplies for winter use. The depositing of these supplies at the lakes indicates that the period between the departure in September and the beginning of October of the reindeer from the country, and the end of the darkest period, is spent just in these places. These months are not spent on the ice or on the sea coast. In 1830 the Eskimo did not come to Ross's winter quarters until well into January, and in 1831, when his ship had changed station, even later. Where the preceding time had been spent Ross had no opportunity of learning personally, but the Eskimo told him that they had been staying partly at Lake Netchillik and partly at another Lake in the series of lakes situated somewhat more to the north, and had been living on reindeer meat and salmon. A few more circumstances may be mentioned in support of the view that the first months of the winter are spent in places where the hunting of reindeer is pursued in the summer, and, perhaps, in the autumn. Ross observed that during spring the natives transported blubber to Lake Netchillik and other lakes to deposit it there. Lastly, the same author mentions winter houses near a lake where his Eskimo guide's kayak lay waiting for summer use. Moreover, there can be no doubt that the "summer houses" Ross himself saw and described near Lake Netchillik were in reality winter houses. He says, regarding them, that there was a group of 30

stone circles with walls about one metre in height. The largest consisted of an oval 4.3 metres long and 3.7 metres broad. These stone walls which remind one of the winter houses on Iglulik can hardly have had anything to do with summer tents. Nothing remains but to regard them as unroofed winter dwellings. The reason why Ross was misled into calling them summer houses was mostly his wish to distinguish them from the snow houses. GILDER mentions similar winter houses from King William Land, where according to him, they are fairly numerous, and he compares them with those similar to them on Iglulik.

As regards the chief group of the Netchillik region, which keeps to the Boothia Isthmus, it is now possible, as regards the main features, to render an account of its settlements and its wanderings at the different seasons, with all due regard to its dependence on natural conditions. One more circumstance, viz., absence of wood, must, however, also be mentioned. The later expeditions did not find wood conspicuously wanting, the FRANKLIN Expedition having supplied wood sufficient for a long period. Ross, on the other hand, among the first Eskimo who visited him in 1830, found harpoons of which the shafts were made of small pieces of wood and bone joined together very cleverly, and with great care. For the rest, European culture had even then reached them in the form of a few English knife-blades. One would almost think that the absence of wood would prevent the making of the Eskimo ice-sledge, with its high runners, but one sees that the want was supplied. At the magnetic pole MC. CLINTOCK met Eskimo who had sledges with runners made of rolled-up, frozen, seal-skin, which were bound together with transverse pieces of bone. On Matty Island the same author found some sledges which had been left behind, and the runners of which were about 1 metre long, about 7 cm. broad, and 10 cm. high. On a lake, Ross saw, in the spring of 1831, sledges which were made of ice. On November 9th, 1903, AMUNDSEN visited an Ugjulit-tribe which lived on King William Land, south-west of Gjöa Harbour; it was living in six huts in a district where autumn hunting was plentiful. On March 17th, 1904, on his way to the magnetic pole, he encountered, in the neighbourhood of Matty Island, Netchillik Eskimo who were living in snow houses on the sea-ice, which was level and glassy between the scattered areas of pack-ice. He met the men belonging to the tribe just as they were pursuing Maupok hunting, each with his dog led in a string. As pointed out by AMUNDSEN, it was just in the same district and at the same season of the year that MC. CLINTOCK met these Eskimo in 1859. Naturally, "Gjöa" had attractions for the Eskimo of both tribes, so that they settled down by preference in the neighbourhood of the ship. But before the ice broke up they were obliged to set out for the reindeer-hunting, and fishing, grounds. But as soon as the ice had formed again in the autumn they came back and lived on meat and fish from their stores. In 1908 these supplies were consumed by the middle of January, and the Eskimo were obliged to resort

to Maupok hunting, but not until well within February could it be pursued with any great chance of success. During spring the newly born young of seals are also hunted, and during June Utok hunting is carried on.

The Netchillik Eskimo spend the summer in the interior where they carry on salmon-fishing and reindeer and musk-ox hunting along the lakes and streams. When the autumn hunting has come to an end, and the reindeer herds have gone southwards, the Eskimo remain in the places where the depots have been laid down, and live on these. The tents are replaced by winter houses, which have stone walls, and are probably covered with ice, snow, and earth. When the darkest mid-winter days are past, or, properly speaking, when the supplies have been consumed, the Eskimo disperse in small groups over the level layer of the winter ice and move from place to place, living in snow houses, and pursuing seal hunting on the ice after the Maupok method. The fact peculiar to the Netchillik district in contradistinction to the previously mentioned territories may be expressed by saying, that the Netchillik district is decidedly Arctic in character, and shut in from the influence of the ocean. The winter ice-covering remains unbroken for more than 9 months in the year, so that during the greater part of the year the district has more the character of a continent than of coast lands. There are no straits like those at Smith Sound and Eivillik, with strong currents keeping the water open during the whole, or greater part of, the year, and permitting the hunting from the ice-edge of walrus or seal. In the Netchillik Sea only the real seals occur, and the Ringed Seal alone is of importance as an animal to be hunted.

Immediately south of Netchillik Sea near the lower narrows of the Back River lives a small tribe which, in 1879, in KLUTSCHAK's time, consisted of 16 families. By older authors this tribe is called Ukusiksillik, and it has sometimes been regarded as a group of the Ugjulik Eskimo, sometimes as a group of the Netchillik Eskimo, which for some reason or other has penetrated southwards. But, as is shown by BOAS, the group has undoubtedly always lived at its present settlements. It must certainly be regarded as being adapted to a kind of inland life, even if it visits the estuary for the sake of hunting seals, and as regards kinship, it must evidently be reckoned together with the whole of the Netchillik group. What is also a proof of this connection is that SCHWATKA found it in possession of wood and articles from the FRANKLIN Expedition, and its members with some knowledge of the unfortunate expedition.

We have very slight knowledge of the Ukusiksillik tribe. BACK was the first to encounter it. He met it near some rapids or whirlpools in the neighbourhood of the mouth of the river named after him. At that period (July 28, 1833) the tribe lived in tents, and was occupied in fishing salmon in the rapids. At the settlement thousands of fish were laid out to dry. The tribe possessed five kayaks, and even at this period it possessed a few knife-blades and lance and arrow-heads of iron. On July 30th, 1855, JAMES ANDERSON met with the Ukusiksilliks near the same rapids. They

lived in three tents of musk-ox skin, and had an abundance of fish and reindeer meat hanging out and drying. On the river five men were hunting reindeer from kayaks. Near Hayes River ( $67\frac{1}{4}^{\circ}$  N. lat.,  $93\frac{1}{3}^{\circ}$  W. long.), in May 1879, SCHWATKA met with some Ukusiksillik families living in snow houses. At that season of the year they were almost famishing; they had no seal blubber at all, and were obliged to dispense with artificial heat. At that time they were living chiefly on the flesh of musk ox, and their boots were made of the skin of this animal. During the summer they pursued reindeer in their kayaks, and carried on fishing at the whirlpools.

### The Eskimo at Coronation Gulf<sup>1</sup>.

While the Eskimo even in Netchillik have been shortly and ethnographically dealt with by BOAS, scientific interest has only recently been directed towards the Eskimo who inhabit the islands and coasts at Coronation Gulf. Of all the Eskimo groups there is none to which so little attention has been paid. It is true, that the number of the travellers who have visited Coronation Gulf is not great, but it is nearly as great as the number of those who have visited Netchillik. The first was HEARNE, who in the summer of 1770 arrived at the mouth of Coppermine River. The later and so unhappily famous JOHN FRANKLIN, sailed during July and August 1820 from the mouth of the same river along the south side of Coronation Gulf to Point Turnagain on the north side of Kent Peninsula, and on a later expedition, while his companion RICHARDSON in 1826 sailed from the Mackenzie along the north coast of the mainland to Coronation Gulf, FRANKLIN himself navigated the coast west of Mackenzie as far as Point Return ( $149^{\circ} 37' W.$  long.). In 1838, SIMPSON with his companion DEASE, navigated the south coast of Coronation Gulf, Bathurst Inlet, and Dease Strait to a point on the east coast of Kent Peninsula, and in 1839 he again sailed across Coronation Gulf, and then along the north coast of the mainland and through Simpson Strait as far as the west side of Boothia Isthmus, whereby connection was established with BACK's discoveries from the east. In the summer of 1848, JOHN RICHARDSON repeated his above mentioned journey from the Mackenzie to Coronation Gulf, and in 1849, in accordance with his instructions, JOHN RAE was sent out, who investigated the coast regions at Coronation Gulf, and approached Wollaston Land, where, however, the ice prevented his landing. Finally, RICHARD COLLINSON, in his ship "Enterprise", spent the winter of 1852—1853 in Dease Strait on the south side of Victoria Land. In August 1900, J. MACKINTOSH BELL undertook a journey from Great Bear Lake to Coppermine River, but turned back before he reached its mouth. He found Eskimo occupied in the hunting of reindeer, but did not come into touch with them. Finally we have got highly important enlightenment as regards the population of this region from V. STEFANSSON, who during

<sup>1</sup> COLLINSON, I—III; FRANKLIN; HEARNE; MC. CLURE; RICHARDSON; SIMPSON; STEFANSSON. Cf. STEENSBY, I, pp. 99—105.

1910—11 travelled in the district and lived amongst the Eskimo as one of themselves.

As regards habitation Coronation Gulf constitutes a centre similar to the estuary of Back River with its adjacent straits and skerries. Towards the east it is separated from this Netchillik domain by the long stretch of coast between the Adelaide and Kent Peninsulas, which partly consists of stratified rock, and partly of granite and gneiss and is usually provided with skerries. In August 1839, SIMPSON everywhere found the pack-ice from Victoria Strait lying close up to the outer coasts of the skerries, and right in to land where skerries were wanting. On the other hand, the water within the skerries was free from ice and "clear as crystal". This stretch of coast is, perhaps, not permanently inhabited. The old tent-sites and remains of store-caches which SIMPSON came across were only scattered, and the traces did not begin to become frequent until after he had left Dease Strait and had come to the western end of Simpson Strait. On the south coast of Victoria Land, at Dease Strait, COLLINSON found no signs of habitation. On the other hand, in 1905, on the east coast GODFRED HANSEN came across a group of Eskimo who probably have belonged to the tribe (Ekollugtogniut) which STEFANSSON allots to Albert Edward Bay. From STEFANSSON, as previously mentioned, we have got further information regarding the settlement at the indentations on the south-west coast of Wollaston Land and Prince Albert Land, whereby it appears that the settlement is more comprehensive and extends further into Prince of Wales Strait than COLLINSON's observations in 1851—1852 led us to suppose. STEFANSSON's observations also show that the narrow stretch along Dolphin and Union strait and the adjacent mainland coast are not uninhabited, as one had reason to expect from the fact that RICHARDSON twice passed the strait without meeting Eskimo. The region, which with its groups of islands in the strait must also be regarded as good Eskimo territory, is inhabited by several groups of Eskimo, the forefathers of whom must have been hunting in the interior during RICHARDSON's visit. STEFANSSON gives these groups or tribes different names, which are, however, immaterial to us in this connection. The same applies to his names for the groups which, on a map, he places in the area between Dolphin and Union Strait and Dease Strait, although it is the first time that we get further information about these matters.

Coronation Gulf itself constitutes an oblong basin which is connected with the adjacent waters only by narrow straits. The straits as well as the Gulf itself are studded with numerous islets, so that the water is to be understood as a confusion of channels rather than as a large sheet of water. As a line across the mouth of the Coppermine River and the west side of Coronation Gulf more or less forms the western boundary of the large archaean area of North-east America, the coasts of Coronation Gulf essentially consist of steep granite and gneiss cliffs, although the country is rather low, and the islands are real skerries or steep rocky isles built up of granite, trap or

basalt. COLLINSON found the same to be the case with the islands in Dease Strait, whereas the groups of islands which bar Dolphin and Union Strait are built up of limestone. Coronation Gulf, by reason of its position, has extremely weak tidal currents, which come partly from the west and partly from the east, and, as the narrow inlets, with the islands, further act as a sieve to the inflowing currents, the pack-ice cannot succeed in filling up the gulf. The ice, which in the winter forms bridges between the numerous islands of Coronation Gulf, is the smooth winter ice which lies unbroken from October to July, but which always breaks up in the summer. The conditions in the Gulf as seen by FRANKLIN in the summer of 1820 quite accord with the conditions seen by RICHARDSON in 1826, DEASE and SIMPSON in 1836—37, RICHARDSON in 1848, RAE in 1849 and COLLINSON in 1852—53. Its waters were at all times so free of ice, and so open, that it could be navigated in all directions along the coasts and between the islands, even if as is from time to time mentioned, the wind had driven small pieces of pack-ice together in certain places on the coasts. The fresh-water affluxes received by Coronation Gulf can scarcely play any great rôle as regards the open water during the summer. The Coppermine River has too inferior a quantity of water for the purpose. On the other hand, this river is of importance on account of the drift-wood which it carries and distributes along the coasts of the mainland and the islands. FRANKLIN, to be sure, says, that it does not carry drift-wood, but this can only refer to heavy timber, which is carried to the Arctic Ocean only by the Mackenzie. It seems, in reality, as if several rivers contribute their share of drift-wood. Thus, SIMPSON found that even the small Ellice River, which empties itself into Dease Strait, tore away the low willows along its banks and carried them out to sea. All large pieces in Coronation Gulf can without doubt be attributed to the Mackenzie River. As the fuel of the expeditions consisted of drift-wood, its occurrence and size was noted with particular care, and from these notes its decrease towards the east as far as Cape Barrow can be followed up. SIMPSON broke into raptures when, on his way back from Dease Strait, having passed this promontory, he again found the beach strewn with drift-wood, with which he had had almost entirely to dispense in Bathurst Inlet and on the coast of Kent Peninsula. STEFANSSON was of opinion that the greatest quantity of drift-wood was found on the coasts which faced west, or which were most exposed to the prevalent north-westerly winds. Thus there was more drift-wood on the south side of Prince Albert Sound than on the north side. On the coast of the mainland drift-wood only began to become abundant at about 120° W. long., (or more exactly, to the west of Crocker River), after which it occurred as far as the west of the Mackenzie, when it began to decrease. STEFANSSON says of the drift-wood in the region of Coronation Gulf that it is sufficient to provide the Eskimo with wood for implements, but that it would disappear in the course of a short time if they should begin to use it for fuel. For the rest, according to the same author, there are at

any rate some Eskimo in the district who reach so far south on their summer journeys to the mainland that they can bring wood back with them from the forest.

From the notes now before us we are able to form a fairly correct conception of the aquatic mammals in Coronation Gulf. Whales are not found, or, at any rate, only as rare and stray visitors. The only person who mentions a whale is SIMPSON, who found the skeleton of one on the coast of the mainland at  $103^{\circ} 37'$  W. long. Towards the east the pack-ice of Mc. Clintock Channel probably acts as a barrier, and according to Simpson's observations the whales coming from the west did not reach so far east. FRANKLIN remarks, in addition, that by conversing with the Eskimo he had ascertained that neither whales nor walruses were found, but, on the other hand, numerous seals. STEFANSSON remarks that here the Eskimo only know the "Bowhead" whales from a few carcasses driven ashore, partly because here they are very rare, and partly because the Eskimo are always in the interior during July and August, when the whales possibly may stray in. The same is applicable also where the small whales, for example the White Whales, are concerned.

When, in 1770, the first white man, HEARNE, looked across Coronation Gulf, a number of seals were lying sunning themselves on the ice which was still unbroken around the islands. All later travellers mention the great number of the seals, but only seldom did they succeed in catching any of them as spoil, partly because they were very vigilant, and partly because they sank to the bottom when shot, a fact with which their leanness during summer has some connection. It was the "small seals" which occurred in such quantities, or, in other words, the Ringed Seal, so well known from Netchillik and the more eastern territories. Moreover, according to the evidence of several travellers (RAE, STEFANSSON and others) the Bearded Seal occurs in considerable quantities, but it is hunted to a relatively slight extent, and almost always by employing a kind of Maupok method, when two men co-operate.

Reindeer are found in large numbers round Coronation Gulf. In the spring they migrate from the south and cross the ice to the small islands where they bring forth their young. On October 9, 1852, COLLINSON saw the reindeer gathering in herds along the north side of Dease Strait waiting for the ice to form a bridge over to the mainland, and next spring, after April 6, he again saw them wandering across the strait northwards. At the end of April and the beginning of May 1911 STEFANSSON saw the beaten paths of herds of reindeer going north, both in Coronation Gulf and Dolphin and Union Strait. In the autumn, together with the herds came a flock of wolves as well as a party of Eskimo; and in Victoria Land COLLINSON saw a cleft which, by an arrangement of stones and turf, had been made to serve as a natural hunting fence. On the islands in the strait, he also saw an arrangement of stones which was used by the natives when driving the herds together. FRANKLIN and SIMPSON mention similar

fences from the valleys in the districts at the south side of Coronation Gulf, where they were made of piled-up turf.

The first English travellers did not take any great interest in the Eskimo population. At the mouth of the Coppermine River and in Dease Strait, however, they came in closer contact with them. There they got the impression that linguistically they were, if anything, approximate to the East Eskimo, and that they differ from the West Eskimo in cultural respects, also, by not wearing lip ornaments. A more exact definition of the different tribes in the district was, however, only commenced by STEFANSSON. But this is less essential in this connection. Here, the main point is that Coronation Gulf with its smooth covering of winter ice from October till the end of June makes communication between all islands and coasts reciprocally easy, whereby this becomes an absolutely habitable domain, which is bounded on all sides by land or ice-packed seas. How many Eskimo this domain with its smaller neighbouring territories on the east and west coast of Victoria Island harbours is not known with any certainty; but, according to the Eskimo conditions, the number can hardly be insignificant. SIMPSON estimates that those who, during the summer, visit the coast between the west end of Coronation Gulf and Cape Barrow number 3—400, and COLLINSON was visited by 2—300 at his winter quarters in Dease Strait.

As to the hunting implements of these Eskimo, HEARNE says that they are like those which CRANZ describes from Greenland, and he saw, as did later SIMPSON, COLLINSON and MC. CLURE, implements which were made of copper. The implements which these travellers brought home are now to be found in the British Museum in London, and the copper material plays rather a prominent rôle, especially in the arrow points. Furthermore, some fish-hooks, woman's knives, axes, ice-chisels, as also numerous spear-heads are of copper. On the other hand, there seem to be no harpoon heads of copper and there is not a single article of copper from the Mackenzie or Netchillik Eskimo from which we may be justified in concluding that the copper, which must have come from the Bloody Fall pits at Coppermine River, neither at all nor even sparingly got beyond the Coronation Gulf territory.

Umiaks are entirely absent with these Eskimo. On the other hand, they have kayaks, which here are said to be smaller than those at Bering Strait and Hudson Bay.

All the groups which SIMPSON met on the south side of Coronation Gulf were found to spend the winter out in the Gulf on the sea ice, or on the islands where there was easy access to the seal hunting, which, in the winter and spring, was their principal means of subsistence. Until well into the winter they live on supplies of reindeer meat and fish, which they have put by in the course of the summer. If for some reason or other the seal hunting fails in the spring, great distress supervenes, which RAE found to be the case in 1849. In the spring they generally kill so many seals that

they can store away blubber for use in the autumn. Shortly before the ice breaks up they set out in sledges for the continent, where, in reindeer-skin tents, they spend July and the following months in salmon fishing in Coppermine River and other streams, and also in the hunting of reindeer as these, by degrees, become well nourished on the summer vegetation. When the sea is frozen over once more, and the reindeer have started for the south, the Eskimo return in the course of the winter to the Gulf, where they live in snow houses. Probably this move does not take place until the supplies are almost consumed. That HEARNE, on the coast of the continent, came across a couple of indubitable winter houses is in accordance with this. They were situated on the southern side of a hill, half under ground, and "above were closely set with poles, which met in a conical shape like the summer tents." Round them lay quantities of bones, and also caldrons of "whitish grey stone."

At Dease Strait COLLINSON found that the Eskimo migrations were dependent on those of the reindeer backwards and forwards across the strait. From May till October they lived on the south coast of Victoria Land, where, to a great extent, they occupied their time in fishing in the fresh waters. In the autumn when the reindeer gathered on the coast they hunted them in fences, and then followed them across the islands to the mainland. In a short report to the Royal Geographical Society in London COLLINSON expresses himself thus about the Eskimo (II, p. 200): "They belong to the Central tribe of Esquimaux, wearing the same costume and speaking a similar dialect to the Igloolik and Boothia Isthmus people; and unlike the Greenland and Behring Str. tribes, who perform almost all their migrations by sea, these people travel over the land and ice with sledges. Their journey to Victoria Land is performed previous to the breaking up of the ice in the summer, and having no oomiaks, and but one or two kayaks, their communication with the continent is cut off until the straits are bridged over by the frost; they then assemble between Cape Colborne and the Finlayson Islands, which is the great crossing-place for the reindeer, and, after they have obtained as many as possible, pick up their caches of fish and venison, and return to the continent for the winter."

It must be said about this wintering on the continent, however, that COLLINSON had no opportunity to substantiate this point. In his description of his journey he acknowledges this himself, but thinks that he is able to conclude that they spent the winter not far distant from his own winter quarters on the north side of Dease Strait, without it being possible for him, however, to find their abiding place. The explanation simply is that they did not enter the mainland in order to remain there, as COLLINSON assumed, but that they at once, with the commencement of the winter, settled at the coasts of the gulf or on its islands, whence they had easy access to the ice for the purpose of seal hunting and whether they could easily transport their supplies of dried meat and fish from the continent.

STEFANSSON'S description shows still more distinctly the aspect of the

annual economic cycle of these Eskimo. In the winter they live almost exclusively on seals, which they hunt by employing the Maupok method. They use dogs to find the breathing holes. STEFANSSON explains in a most interesting manner why the Eskimo in these districts live on the ice and constantly have to move their settlements of snow houses while extending the range for obtaining their winter means of support. "In a month or so the hunter will have killed all the seals within the radius of about five miles; they must then move camp about ten miles, so that a five mile circle around their next camp shall be tangent to the five mile circle around their last one." For a hunter who employs the Maupok method, a five mile radius is a suitable range. The Utok method plays only a subordinate rôle, and hunting from the edge of the ice and cracks in the ice, if practised at all, does not seem to be of any importance whatever. Even before the ice breaks up the Eskimo withdraw to the interior, where they carry on salmon fishing and reindeer hunting. Here the winter sledge-dogs are used as pack dogs while the men themselves carry the kayaks, which are used as ferries for crossing rivers, and are also employed in the reindeer hunting. The summer proper they spend chiefly at the salmon fishing stations, while the autumn is the time for the great reindeer hunt. During the great salmon fishing and reindeer hunts, and during autumn and early winter while the supplies last, is the time when large groups collect or when the tribes meet, whereas the time of the winter ice-hunting is a time of dispersal.

### The Mackenzie Eskimo<sup>1</sup>.

The domain of the West Eskimo which extends along the north and west coasts and partly along the south coast of Alaska begins to the west of the unbroken stretch of coast between Coronation Gulf and Darnley Bay. Such original conditions as we find with most of the Central Eskimo and with some of the Greenland groups are not met with here, because the West Eskimo have been subjected to indiscriminate extortion by Russian and American whale hunters. The following pages will be specially concerned in re-establishing the conditions as they originally existed, and as the first European and American travellers found them. Apart from the Eskimo at the mouth of the Mackenzie River and the few Asiatic Eskimo, all West Eskimo are now under the rule of the United States of America, as in 1867 the Russians sold their American possessions. Even before this period American whale hunters had visited Alaskan waters. In 1848 the first American whale hunter passed through Bering Strait, and was soon followed by many others. Further and further did the whale hunters penetrate towards the north and north-east. In 1889 they reached Herschel Island, and there found the good harbour which has since been the central winter quarters of the fleet of whalers which yearly visits the waters outside the mouth of the Mackenzie as far south as Banks Land. Owing to the influence of the

<sup>1</sup> COLLINSON; FRANKLIN; HOOPER; MC. CLURE; MACKENZIE; PETITOT; RICHARDSON; SIMPSON; STEFANSSON; STOCKTON. Cf. STEENSBY, I, pp. 106—111.

whale hunters, the Eskimo in the Mackenzie district are greatly degenerated, and their original form of culture is no longer met with in its pristine form. This, however, is the only form which is of interest here. Even in its original condition of culture the Mackenzie district was visited more often than was Coronation Gulf; but as regards ethnography it has not been thoroughly dealt with. The first to visit this coast was ALEXANDER MACKENZIE, who, on July 12, 1789, reached the mouth of the river which now bears his name. Of later travellers may be mentioned FRANKLIN and J. RICHARDSON 1826, the latter again in 1848, SIMPSON 1837, W. H. HOOPER 1849, MC CLURE 1850, COLLINSON 1851 and 1853, PETITOT 1865 and C. H. STOCKTON 1889. Amongst travellers of recent date must especially be mentioned V. STEFANSSON, who stayed there during 1906—1907; and, also, several times during the years 1908—1912. The inhabitants of the coast have for long — even before 1889 — been in contact with Europeans, in that they yearly visited Fort Macpherson, as also Fort Anderson, which was afterwards demolished. Here, as a name common to them all, I am using the term "Mackenzie Eskimo," as the names "Great Eskimo" and "Tschiglit" Eskimo, which PETITÔT uses, are not satisfactory.

The boundaries of the district are not sharply defined. Towards the east it is the above-mentioned stretch of coast east of Darnley Bay which forms the boundary between the two large groups of West Eskimo and East Eskimo, the distinction between which, however, seems to be more geographical than ethnographical in character. According to STEFANSSON's observations they are not geographically more approximate to each other than was formerly supposed, and, at any rate in earlier days have enjoyed a lively intercourse. Today, however, the whole stretch of coast from Cape Bathurst to Cape Bexley is uninhabited. Towards the west there is the long uninhabited north coast of Alaska as far as Point Barrow. A feature which at once attracts one's attention as regards this stretch of coast is that the original winter settlements generally were situated on points or projections. There has been some doubt as to whether the most easterly winter settlement was situated on Cape Parry or on the somewhat more easterly Cape Lyon. According to STEFANSSON, it seems as though the habitation of this group should be set even further east than Crocker River. West of the Mackenzie, the most westerly settlement seems to have been situated between Herschel Island and Manning Point. FRANKLIN and W. H. HOOPER saw the most westerly winter houses at about  $141^{\circ}30'$  W. long.; but when MURDOCH, during 1881—1883, visited Point Barrow, the most westerly settlement was situated on Herschel Island, where there was said to be one of considerable size. Within the domain itself, also, it is impossible to fix the exact situation of the settlements, as the visits have been made too rarely and at too great intervals. It seems that one of the largest settlements was situated on Point Atkinson ( $131^{\circ}$  W. long.), where ATKINSON found 17 winter houses besides a meeting house (kashim).

As regards the character of the coast there is a great contrast between this territory and Coronation Gulf. Because, while we there had a range of skerries with a rocky coast, at the mouth of the Mackenzie we find only shoals

with a flat coast, which, with the exception of limestone promontories such as Cape Bathurst and Cape Dalhousie, consist of alluvial formations. The factor which, from a geographical point of view, characterizes this territory is the disemboguement of that gigantic stream the Mackenzie River. It is not only the deposit of the river, which has built up the coast and the considerable delta which in the whole of its extent southwards is visited by the Eskimo during the summer, but it is also the warm water supplied by the river which makes possible the habitation of the sea-coast. And the quantity of drift-wood which the river carries by reason of the huge strength of its current and its continuous flow through the woodlands, inasmuch as the limit of the woodlands is not reached until the beginning of its delta, enables the Eskimo here, when building their winter houses, to have as abundant an allowance of wood as have the inhabitants of the woodlands. As long as the expeditions were on this stretch of coast they were not inconvenienced by lack of fuel.

The most important effect of the river water is that the pack-ice is kept at a greater distance from land than one would otherwise expect to find it, and that here during the summer a large open basin is formed, which towards the west through a narrow channel along the coast of Alaska is connected with the open sea round Bering Strait. FRANKLIN on July 9, 1826, found open water as far as 69° N. lat., and ascertained from the Eskimo that with a land breeze the ice would go still further out to sea, and remain there "until the stars again showed themselves."

According to FRANKLIN's and RICHARDSON's observations and information from the Eskimo, the White Whale is the whale which first appears. The Black Whales are not seen until the end of July, when the ocean has become as open as it possibly can. RICHARDSON learnt from the Eskimo, that besides White Whale as also large and small seals (Bearded Seal and Ringed Seal) Narwhals were found, and also a kind of Black Whale. Walruses were not known, as a rule they do not go east of Point Barrow. By the Black Whale species must be understood the Bowhead which every summer passes Point Barrow on its way to the sea off the Mackenzie, whence it is then followed by the whale hunters. PETITÔT distinguishes between "la baleine" and "le marsouin." The first mentioned is hunted from a umiak whereas the last mentioned is hunted from kayaks. About whale hunting from umiak RICHARDSON reports that it is carried on jointly. There is every reason then to believe that the hunting of large whales is carried on at the Mackenzie under similar forms as west of Point Barrow, whence more detailed accounts are to hand.

By PETITÔT's "porpoise" must be understood the White Whale, which animal plays a prominent rôle to the Mackenzie Eskimo. MACKENZIE saw a great number of White Whales in the mouth of the river, and from his guide got the information that this was the animal on which the Eskimo principally lived. By this it is not by any means asserted that smaller dolphin-species should be entirely absent; but probably it is as in Greenland, where these animals are difficult to hunt, and without any practical importance to mankind. On the other hand, the White Whale gives a splendid bag; it seems as if, which PETROFF likewise reports from

Alaska and Yukon, that it preferably resorts in schools during the summer to the shallow water at the mouths of the rivers, where it is hunted by a series of kayakers, who try to imprison the school. Towards the east the whales do not go much beyond the Mackenzie territory. According to RICHARDSON's and STEFANSSON's observations they diminish east of Cape Parry, and in great numbers hardly go east of Crocker River. The whale hunting which is carried on during some weeks about the month of August is different from the hunting of most of the hitherto mentioned Eskimo groups, inasmuch as these essentially have procured blubber by seal hunting on the ice during winter and summer. The period partly coincides with the period of reindeer hunting in the interior.

Seal hunting is, however, by no means neglected in the Mackenzie territory, and is here, as in other Arctic districts hunting on the ice. Likewise here it is the Ringed Seal, of which STEFANSSON<sup>1</sup> reports that nowhere else did he see them as numerous as in Darnley Bay. In the winter the Maupok method is used, and in spring are hunted the seals which have crept up on the ice (Utok). The last mentioned modes of hunting are, however, hampered by the peculiar geographical conditions of the stretch of coast, in that the shallow water at the coast necessitates the seals resorting rather far out to sea, and out there the pack-ice lies, and proves a hindrance, so it is only on the smooth ice between the stranded icebergs and ice blocks that hunting can be carried on. According to RICHARDSON the Mackenzie Eskimo in the spring disperse over the ice to carry on seal hunting, and during this time they live in snow houses.

The summer is not solely devoted to whale hunting. It is also at this season that the Eskimo have to fish for salmon in the rivers, and in the autumn they must hunt the large herds of reindeer which visit the coasts and the few near lying islands such as Herschel Island, which especially seems to be a favourite summer and autumn place of residence for the Western Mackenzie Eskimo. Of hunting methods a few were observed. FRANKLIN on August 4, 1826, some kilometres to the west of Point Manning, was present at a battue where the Eskimo tried to surround a herd of reindeer in order to drive them out into a lake, where the animals were killed with spears from kayaks. Finally, along the coast, numerous hunting fences were found which generally were made of piled-up turf. SIMPSON and FRANKLIN mention several which generally led out into a lake, so also in this case the usual thing seems to be the killing of the animals from the kayak. Fishing plays an important rôle, which is evident from the supplies of salmon which SIMPSON and PETITÔT mention, as also from the fact that here are used fishing nets of bast, sinews or whalebone. The East Eskimo only fish with the salmon spear and the little hand net. This employment of nets for which even bast is used as a material probably points in the direction of the wood and lake districts of the interior of America. STEFANSSON asserts that the net was imported about 125 years ago.

The sledge is the usual Eskimo form of ice-sledge, with narrow runners, which is extensively used on the smooth ice, which, during a great part of the

<sup>1</sup> I, p. 321. — II, p. 451.

year, lies like a border between the coast and the pack-ice, covering the shallow water. It is this smooth coast-ice which forms a passable road along the north coast of Alaska. Every spring this sledge road is, or rather was, visited by the West Eskimo who brought European goods to the district round Point Manning, where they met the Mackenzie Eskimo. The description which PETITÔT gives of these sledges and this mode of travelling is interesting, because this author, who lived as a missionary amongst the Hare Indians, was in advance prejudiced against the enemies of the Indians, the heathen Eskimo, for which reason he is inclined to see everything from the darkest point of view where they are concerned. The sledges he describes as heavy and clumsy contrivances "the smallest fault of which is to penetrate deeply into the snow" — not thinking of the point that they are not meant for conveyance on the snow but on the ice. Every second or third hour, he says, the runners have to be brushed over with water and snow to be kept slippery, and for this purpose the ice has to be cut through, which is a tedious task. As a rule the sledge is put to with 5—6 dogs in a transverse row, not in a line as with the Indians. The Eskimo walks behind the sledge, leaning on a stick "geignant," and constantly stopping; he does not demand "the speed of Pegasus" from his dogs. At the end he always throws himself on the sledge even if it is heavily loaded. After this PETITÔT recounts all the articles of dress, chattels and provisions which the Eskimo carries with him, and he says that "these Sybarites of the Arctic Sea need a comfort which the North Indians easily dispense with."

RICHARDSON, from Point Atkinson has already given a summary of the various occupations of the Eskimo at the different seasons. About the inhabitants here he says that they hunt reindeer and water-fowl on the coast plain during the summer, that they carry on whale hunting during one month or six weeks in the autumn, live with their families in settlements during the dark winter months, and in the spring go seawards out on the ice to catch seals. PETITÔT says that they fish in the delta from the middle of June till the middle of July. The fish (White Salmon and "L'inconnu") mixed with blubber is dried or preserved in bags of skin. Together with the fishing, reindeer are hunted and the latter hunting is continued until August, when hunting of whales at sea begins. The annual economic cycle is somewhat disturbed by the circumstance that the periods for hunting reindeer and White Whale partly coincide, which causes a division of the population, in that some go to the interior and others to the sea coast. Apart from this, however, the Mackenzie Eskimo are, during the summer, pronounced inhabitants of the interior, like the last mentioned groups. The Eskimo use tents until October, when they move into their winter dwellings. Finally, in the spring, the snow house is used, which PETITÔT was the first to observe and describe from these districts. As regards the winter-house, which will be mentioned later, I will only point out here that this house — several of which are built together in permanent, village-like groups — so to say give the Eskimo a more assured culture when compared with their southern neighbours. It is used during the autumn and a great part of the winter, which accords with two facts, viz., that a specially large supply of fish and whale blubber can

be stored away, and that the sea ice, in a lesser degree, is adaptable for Maupok hunting. PETITÔT who, from predilection, describes the Eskimo as fat, sedentary, good for nothing fellows in contrast to the lean, hardened Indian, says that, compared with what he has otherwise seen of the dwellings of "savages," the Eskimo winter house is the best which can be procured in 69° N. lat. In spite of his ill-will, perhaps no other author gives a better idea than does PETITÔT of the comparative richness and height of the Eskimo hunting culture.

Through travellers meeting the Mackenzie Eskimo one gets the impression that they originally were a comparatively numerous tribe, and one gets the same impression from their numerously attended visits to the trading stations. Thus PETITÔT found that Fort Macpherson was on June 11, 1877, visited by about 500 Eskimo, who had arrived in 24 umiaks, and only by 150—200 Kutchin Indians. PETITÔT estimated the total number at 2000. On the basis of RICHARDSON's statement, that in 1848 he saw about 200 kayak men coming out from a settlement where they had been carrying on White Whale hunting, STEFANSSON assumes that the number must then have been 2000 at the very least. Meanwhile, under the influence of civilization through whale hunting and trade, this number has been reduced to such an extent that at the census which was taken by the Canadian Mounted Police in 1911, only 40 thorough-bred descendants of the old Mackenzie Eskimo were found, to which could be added only 100 who were immigrants from other tribes or half-breeds.

### The Point Barrow Eskimo<sup>1</sup>.

After ELSON in 1826 had, on a boating trip along the coast from Icy Cape northwards, discovered Point Barrow this was for a long time considered uncircumnavigable on account of the ice, and when in 1850 it was passed by the "Investigator" the crew drew breath more freely, believing that they were already on their way home to England through the North-west Passage. Since that time numerous ships have passed Point Barrow, and the north-western and northern coasts of Alaska are now well-known. These, as regards their structure and the conditions of the ice, offer as far south as the southern coast of Kotzebue Sound quite homogeneous conditions for Eskimo settlements, for which reason these stretches of coast are described collectively, taking the group at Point Barrow as a type.

The country, along the whole of its coast, is a rather low tundra with numerous pools and small streams, while large water-courses and delta-formations are totally wanting. The coast itself, with the exception of such parts as Cape Lisburne and its environments, is low and sandy and has lagoons usually accompanied by bars of sand, which run parallel with the coast, and at some distance from it, and are here and there elevated into low islands. The highly sandy character of the coast is also evidenced by many of its heads being sandy promontories. This is the case, for instance, with Point Barrow, Point Belcher,

<sup>1</sup> Authors specially consulted are: MURDOCH, I and then ALDRICH; BEECHEY; NELSON; PETROFF; RAY; STEFANSSON. Cf. STEENSBY, I, pp. 112—116.

Point Hope and with the peninsulas at the entrance to Hotham Inlet and Esch-scholtz Bay, and this circumstance is of importance, as the Eskimo settlements are located on such sandy promontories as afford them easy access to the sea and ice.

Like the coast of Mackenzie and the north coast of Alaska the stretch of coast we are here considering is open to the pack-ice, which, during the winter is pressed in upon the land, while, for a short period during summer, it retires and gives place to a wide extent of open sea, except when the westerly gale may occasionally drive the pack-ice onto the land. The bars of sand, however, play an important part as regards the pack-ice, the larger cakes of ice grounding on them and forming a barrier within which the smooth winter ice is not broken, but is permitted to form undisturbed. MURDOCH records from Point Barrow that the sea is frozen over, or filled with pack-ice, from the middle of October to the end of July. There the bar is situated about one kilometre from the coast, and the fixed barrier of ice may during the winter attain a breadth of several kilometres before the loose, moving pack-ice is reached. The barrier does not consist, however, of a compact conglomerate of ice-blocks, but is frequently interrupted by level fields of winter ice on which the Eskimo carry on seal hunting as they do on the ice within the bar. In some years, however, under the pressure of violent autumn gales, it may happen that the ice pushes across the bar, and the masses of pack-ice are pressed closely together, so that the smooth winter ice disappears. When this happens, as was the case for instance in the winter of 1882—1883, when a part of the winter ice was crushed, seal hunting is prevented and a period of want ensues.

The streams hardly yield any drift-wood and according to RAY's observations the larger pieces of wood which occur all come from the Mackenzie. The various species of wood the Yukon distributes along the coast of Norton Sound were not to be found north of Bering Strait, and only a very few, old, damaged pieces of drift-wood were of Siberian origin. The theory of its coming from the Mackenzie is also verified by the fact that drift-wood occurs in greatest quantities east of Point Barrow, and decreases in abundance west of this point. The Eskimo collect drift-wood very carefully; but sometimes it takes 3—5 years to collect enough for a boat or a winter house.

In contradistinction to the Mackenzie territory, here the interior of the country is not occupied by Indian tribes, such not being met with until one is south and east of the districts drained by the rivers Colville and Noatak. On the other hand, an Eskimo inland-population has developed here which, according to PETROFF, in 1880 consisted of upwards of one-third of the Eskimo population of the district. STEFANSSON records that during summer they hunt caribou, and with hooks and nets carry on fishing in the rivers. But, during winter, probably the majority of them make sledge journeys to the coast to hunt seals, because the settlements are always situated along streams, which during the greater part of the year form good sledge roads to the coast, being frozen over as early as the first week in September. These sledge roads are not only used by the inland Eskimo, but also by the coast inhabitants on their journeys to the interior

for the purpose of hunting or fishing. The sledge road along the Noatak and Colville rivers was used right down to our own days by the Kotzebue people on their trading journeys to the Mackenzie people.

The animal world and the original hunting conditions are described from Point Barrow by MURDOCH and RAY, who were staying there during the years 1881—1883 as the U. S. A.'s members of the International Polar Exploration. Four species of seal occur, of which the Ribbon Seal (*Phoca fasciata*), the Harbour Seal (*P. vitulina*), and especially the Bearded Seal (*Phoca barbata*), the skin of which is highly valued for making boat covers, are rather few in number, while the Ringed Seal (*Phoca foetida*), on the other hand, occurs in abundance and at all seasons of the year. During the spring and summer it is found between floating cakes of ice, and is then shot from the umiak with a rifle, but originally it was pursued in a kayak, and a small harpoon was used, which was thrown with the throwing board, the shaft of which, by placing itself perpendicularly in the water during the flight of the seal, replaced the float. During the winter Maupok hunting was practised, and during the spring seals were captured by the Utok method, or hunted at the cracks in the ice; in addition, net-hunting under the ice was largely carried on. In the darkest period the net is set parallel to a crack in the ice, along which it hangs down like a curtain. A man must always be present to watch the net, and to entice the seals by scratching on the ice, or by whistling gently. MURDOCH mentions a hunting party which captured upwards of 100 seals during one single night, and he knew of a man catching 30 seals during one night. When daylight begins to come back the net is set horizontally under the breathing holes to catch the seal when it dips down perpendicularly into the water, after having blown. These methods of net hunting, which possibly had corresponding methods among some East-Eskimo groups, such as the northern West-Greenlanders and the Angmagsaliks, and probably are employed also at the Mackenzie, must, according to NELSON, occur southernmost in Kotzebue Sound, but are not met with south of Bering Strait, where, however, the net is used in open water.

These methods of hunting chiefly apply to the Ringed Seal. During the summer the Bearded Seal is captured from the umiak with a harpoon of the same size as that used for walrus hunting. The walruses are rather plentiful in the season of open water, and are pursued in umiaks, especially in September, when the sea begins to be filled with floating cakes of ice. The walrus hunting is or was, however, of slight importance in comparison with the hunting of the Bowhead Whale, which, on account of its size, could yield an enormous quantity of meat, blubber, and whalebone. Previously, before the American whale-hunting had reduced the number of the animals, as many as 20 were killed yearly at Point Barrow; but in the two years 1882 and 1883, only two were killed in all. In no other place in the whole of the Eskimo region has whale hunting played so important a rôle for the Eskimo as along this stretch of coast from Point Barrow to Kotzebue Sound, and in no other place has hunting from umiaks been so well organized and so well pursued. When, in the middle of April, the ice began to form open channels, the whales arrived and continued their journey

northwards until the end of June; after that time there were no whales in the sea until the end of August, when they again began to return, and go southwards from their summer sojourn at the Mackenzie. At the beginning of the whaling season, which was divided into two parts, according to the passing of the whales to and from eastern waters, every boat-owner tried to secure for himself a crew, which kept together as an organized body as long as the hunt lasted. Usually it consisted of eight paddlers, besides the harpooner, who occupied the bow, and the captain, — as a rule the owner of the boat — who sat in the stern and steered. Men were preferred as paddlers, and only in cases of necessity were women used for this purpose. When a whale was sighted they paddled up as close as possible to it and tried to thrust as many harpoons as possible into it in order to exhaust it, so that they might ultimately kill it with lances and tow it to the ice-edge or the shore. All those who flensed it were entitled to the meat and the blubber; but the whalebone was divided among the crews who partook in the chase.

The White Whale, which is of such importance at the Mackenzie and in Norton Sound at the mouth of the Yukon, is only casually hunted at Point Barrow, although, during the summer, large shoals are seen to pass along the coast on their way to and from the Mackenzie.

Reindeer are found in great numbers on the tundra. In the summer the herds come down to the coast, and during the winter some of them remain in the interior, more hilly regions, where the Inland Eskimo hunt them on snow shoes, and by the use of snow pitfalls. During the summer the reindeer are hunted in streams and lakes from kayaks, and in fenced-in enclosures. Thus, MURDOCH observed between a lagoon and the beach a range of stakes which was set to guide the reindeer herds into the water.

The musk ox is no longer found, but according to STEFANSSON it was not exterminated until towards 1860. The Eskimo at Point Barrow mentioned their forefathers having hunted the musk ox in the interior, and their bones were found in abundance in the kitchen middens. That it is the Eskimo who have exterminated the musk ox must be regarded as a certainty.

Fishing in the sea is carried on especially by women, children and old men; but salmon fishing in rivers is more important. The chief implements used in fishing are the salmon spear, hooks, and fishing nets. With the exception of the darkest period of the winter they are used all the year round in open water and at openings made in the ice.

The most characteristic features of the economic culture at the north-western coast of Alaska are (1) the Bowhead Whale hunting, which, in contradistinction to the Mackenzie-Eskimo's single season of hunting in August, is divided into two seasons, corresponding to the wandering of the whales to and from the Mackenzie, and (2) the large use made of whalebone nets for sealing, which nets are dependent on the whale hunting. Lastly, the umiak is the principal form of boat, and it has not degenerated into a contrivance to be used by women, while the kayak plays only a slight rôle on the sea. MURDOCH is of opinion that, with the exception of the Smith Sound Eskimo who originally had no know-

ledge of it, it was only the Siberian Eskimo who made slighter use of this contrivance than did the Point Barrow Eskimo. But here MURDOCH is thinking exclusively of its use on the sea. That kayaks must be of some importance to these Eskimo is evident from his further remark that, so to speak, every grown-up man owns and can handle a kayak. According to MURDOCH it is but slightly employed on the sea, and then only in the neighbourhood of the settlement. But it is of greater importance inland, at the hunting of the reindeer, which are pursued for preference while swimming in a river or in a lake.

Consequently, long annual journeys are not made by the Coast Eskimo, as they can procure their livelihood all the year round in the neighbourhood of the settlement. In the summer the tents are frequently pitched in the same place as the winter settlement occupies. The latter consists, as a rule, of a number of dome-shaped earth-houses grouped around one or two larger houses used as Kashims. As, in the winter and spring, they do not move out on the ice during the seal hunt, they continue to live in the winter houses, and snow houses are built only exceptionally, when the necessities of travelling demand them. It appears that they do not know, or have forgotten, how to finish off the arch at the top, as they lay poles across the opening and cover it with a roof of skins.

### The Asiatic Eskimo<sup>1</sup>.

As regards the form, height and structure of the coast the north-east end of the Asiatic continent corresponds fairly exactly with the north-west coast of Alaska. On the other hand the hydrographic conditions on the western and eastern side of Bering Strait are very different, because the current at the American coast is northerly, while at the Asiatic coast it is southerly. In connection herewith the last mentioned is to a greater extent blocked by drift-ice and ice-masses frozen together than is the Alaskan side, and furthermore the climate to the west is the most Arctic. South of East Cape, where the coast line withdraws in a south-westerly direction, it seems as if a surface of winter ice forms along the land and in the indentations. On an American map<sup>2</sup> of the edge of the shore ice in Bering Strait no coast ice is indicated on the American side, whereas at the above mentioned place on the Asiatic side large ice-surfaces occur, along the outer edge of which the pack-ice is stated to pass. South of Indian Point, or along the real Pacific Coast of Asia, smooth ice does not generally form, on account, amongst other things, of the terrific winter gales and the tidal currents.

From an ethnographical point of view the district is of much interest. The fauna offers good conditions for the Eskimo culture, inasmuch as there are both seals and whales in considerable quantities. Of the kinds of seal are first and foremost the Ringed Seal, and the Bearded Seal, and there are also

<sup>1</sup> BOGORAZ and further ALDRICH; DALL; GERLAND; HOOPER; LÜTKE; JOCHELSON; NORDENSKJÖLD; NORDQUIST; WRANGELL. Cf. STEENSBY I, pp. 117—121.

<sup>2</sup> SMITHSONIAN MISCELLANEOUS, Vol. 25. Washington, 1883.

a couple of new forms the Okhotsk Seal (*Phoca ochotensis*) and the Ribbon Seal (*Histriophoca fasciata*), of which the latter is only found in the Bering Sea. At the coast of the Arctic Ocean and Bering Strait we furthermore find the walrus, which, during autumn and spring, undertakes migrations through Bering Strait to and from Holy Cross Bay, in which district the animal winters.

As the place where the two continents approach each other, attention has frequently been directed to the Chukche Peninsula when theories of the populating of America from Asia have been in question. Here, however, no regard will be paid to this.

Yet in the history of the problem of the origin of the Eskimo Culture, the Chukche Peninsula has played a rôle, because the mere occurrence of Eskimo here at sometime was sufficient reason for many putting their faith in the Asiatic origin of the whole people. Nowadays there cannot in reality be any doubt that the Asiatic Eskimo have immigrated from America at a relatively late date; but for the older theories of migration their presence was one of the points of support.

Finally the linguistic and cultural conditions of the Chukche Peninsula are of such a peculiar and intricate character that with most travellers, especially the older ones, they have occasioned errors, and only GERLAND's acuteness cleared up the confusion. More thorough information on the basis of observations from sojourns lasting through years we have finally obtained through W. BOGORAZ, whose large work "The Chukchees", as a part of the works from The Jesup North Pacific Expedition, is edited by F. BOAS.

Linguistically the inhabitants of the Peninsula are divided into two separate peoples, Eskimo and Chukches; but as regards culture they fall into three divisions, because the latter are divided into reindeer nomads and coast inhabitants, of which the latter live on seal hunting and fishing, like the Eskimo. When, thus, the coasts are inhabited partly by Eskimo and partly by Coast Chukches, and when, in addition, they are visited every summer until the end of September by reindeer nomads with their herds, one can understand how one traveller on a visit to the coast might come across Eskimo, while another almost in the same place might knock up against a Chukche-speaking group, and from that have occasion to distribute the belief that the Eskimo in Asia had succumbed to the Chukches.

On the other hand, other travellers, who have not laid great stress on the great linguistic and the lesser cultural divergencies between Coast Chukches and Eskimo, have been beguiled into giving these latter a too great distribution. Even GERLAND, however, proved that the Eskimo only inhabit the east coast, where their scattered villages, which are always placed on the most projecting point of the coast, are found between East Cape and Plover Bay. According to BOGORAZ, there are nine pure Eskimo settlements, two of which lie at East Cape, and the rest on both sides of Indian Point. Altogether 1200 Eskimo are found here. The Eskimo settlements, in this way, change places with the Coast Chukche settlements; but when one gets north of East Cape the latter hold sway. Along the north coast of Siberia the Coast Chukche settlements are situated between East Cape ( $170^{\circ}$  W. long.) and Tschaunbay ( $170^{\circ}$  E. long.). The

stretch from East Cape to Koluitschinbay (174°50' W. long.) is most densely populated, and this is also best known from the wintering of the "Vega" in 67°5' N. lat. and 173°23' W. long.

NORDQUIST counted 50 settlements altogether, the total population of which he estimated at 2000. Along the coast towards Bering Sea the Coast Chukches also hold sway from 172° W. long. to about 172° E. long., where they are displaced by a population of Koryaks, which again on the Kamchatka Peninsula south of 57—58° N. lat. is displaced by the Kamchadales.

Amongst the many names, which in the course of time have been given to the Asiatic Eskimo, without, however, any of them having been allowed to cling and become a permanent designation, are mentioned *Namollo*, which was used by LÜTKE, and *Onkilon* used by WRANGELL. According to BOGORAZ these words are supposed to originate respectively from Koryak and Chukche, and signify "coast inhabitant" or "sea people" generally, without any regard to their relation to tribe. HOOPER introduced the whale hunter's expression *Tuski* the origin of which is somewhat obscure. DALL in his later works called the Asiatic Eskimo *Chuklukmut* after a locality Chukluk. Finally their own designation for themselves *Yuit* (plural of *yuk*, "man") has obtained more common use through American authors (first employed by the Zoologist W. STIMPSON). In this connection it may be mentioned that the Eskimo at St. Lawrence Island are in language as well as in mode of living closely connected, so that one must assume that the island has been populated from Asia.

When the Eskimo, in spite of the favourable geographical conditions, do not occupy a greater territory in North Eastern Asia than is the case, it is owing to these districts having been occupied by other people, who must have been present long ago, possibly even when the Eskimo arrived there. A number of these already mentioned people have, however, allowed themselves to be strongly influenced by the Eskimo. The Coast Chukches have even adopted the Eskimo economic culture, so that in this respect one can hardly distinguish between the two peoples. The Coast Chukches — especially those at the Arctic Ocean — have adopted the Eskimo ice hunting methods, and the implements for these. Yet they have preserved their Asiatic manner of putting-to the dogs, namely, so that one pair goes in front of the other in a long row, whereas the Asiatic Eskimo place them in a transverse line, in the manner common to the Eskimo.

The Coast Chukches employ a tent dwelling similar to that of the nomadic Chukches, which I formerly<sup>1</sup> assumed to be a remain from the original nomadic existence. Now, from BOGORAZ' investigations, it is plain, however, that the Chukches were coast dwellers before they became nomads, and JOCHELSON is probably correct in stating that these old Palæasiatic coast inhabitants, the forefathers of the Coast Chukches and Coast Koryaks, originally lived in earth huts. With Chukches and Koryaks, reindeer nomadism must be comprehended as a form of economic culture which parts of these tribes have adopted by imitating other tribes — whether these tribes are Youkhagirs or others will not

<sup>1</sup> STEENSBY, I, p. 119.

be conjectured here. With reindeer nomadism these branches of Chukches and Koryaks have also obtained a tent dwelling, which, according to JOCHELSON's supposition, is "built after the type of the dwelling of the Asiatic nomads, but adapted to the needs of the Arctic climate." A form of this winter tent is now again adopted by Coast Chukches and Asiatic Eskimo in place of their former earth hut. BOGORAZ only found one winter earth hut still in use with the Eskimo. Snow houses are not employed.

With regard to the character of the methods of subsistence the Eskimo form is predominant, not only with the Asiatic Eskimo themselves, but also with the Coast Chukches who live amongst them, and still further north at the coasts of the Arctic Ocean. On the other hand the Eskimo influence is smaller with those Coast Chukches who live on the Pacific Coast south of Bering Strait, and this holds good in a still lesser degree as regards the Coast Koryaks. These are, however, somewhat influenced by the Eskimo; JOCHELSON is even of opinion — from a study of legends — that he can assume that Eskimo and Koryaks have once been in direct contact. For the rest they have borrowed in various ways from Eskimo culture through the Chukches. A specially characteristic example is the kayak. It is not employed at the coast of Bering Sea, and even the Eskimo round Indian Point seldom employ it<sup>1</sup>. But then one finds it quite isolated with the Coast Koryaks at Penshina Bay in the Sea of Okhotsk. The occurrence must be explained by the fact that the kayak has come here not along the coast but along the Penshina River from the Anadyr River, where, in the central stream, its employment is regular and important at the autumn hunting of the herds of reindeer which swim the river.

Maupok hunting is carried on in the winter by the Eskimo and the Coast Chukches. In the spring, a form of Utok hunting takes place, and during the whole of the winter and spring, when there is open water or cracks in the ice which can be reached from the coast with the aid of the dog sledge, hunting of seal and walrus from the edge of the ice is carried on. On this occasion the kayak is employed, and it is also used at the coast of the Arctic Ocean during the summer. Sealing-nets are employed during the winter, both vertically along cracks or between two breathing holes, and horizontally beneath the breathing holes, as at Point Barrow. In the summer, nets are set in open water at places where the seals are fond of moving along the shore. On account of the considerable profit which it yields walrus hunting is of special importance here. Formerly whale hunting was of importance; ALDRICH<sup>2</sup> gives a description of whale hunting which calls to mind that of the Point Barrow Eskimo. As users of the umiak, the frame of which is of drift-wood and the covering of walrus hide, the Asiatic Eskimo rank high; like the under-mentioned islanders in Bering Strait they use sails, and undertake long hunting and trading journeys in umiaks. Reindeer hunting in the interior cannot have the same importance for Coast

<sup>1</sup> BOGORAZ saw only one specimen. LÜTKE (pp. 452—53) found that the Eskimo here to the great contempt of his Aleutian travelling companions did not understand the handling of a kayak.

<sup>2</sup> ALDRICH, pp. 56—57.

Chukches and Eskimo as it has for the American Eskimo, because most of the hunting is done by the Reindeer Chukches, and other inland tribes. The majority must therefore stay at the coast all the year round, and they generally can only satisfy their inclination for reindeer meat by exchanging seal blubber for it. In earlier days, according to BOGORAZ, people from Pacific settlements used to go up the Anadyr River to take part in the reindeer killing on the water. Fishing plays no great rôle with the Eskimo and North Coast Chukches. In case of emergency a number of sea fish are caught, but the great salmon fishings in the streams are not carried on up north, because it is only in Anadyr River that the salmon begin to occur in great quantities.

These salmon fishings are of great importance for the Pacific Coast inhabitants south of the Eskimo area, but besides this, the means of subsistence is here also characterized by the hunting of whales and seals. Here, from the South Coast Chukches to the Coast Koryaks and Kamchadales, and further south to the Giljaks, Ainos and Japanese coast inhabitants, we have an indigenous North-east Asiatic, or better, Pacific Asiatic economic culture, which, no doubt, is proportionately old, and the presence of which has hindered a more southern distribution of the Eskimo culture. From a geographical point of view it would be quite possible that the Eskimo culture in its Subarctic form might extend as far south as Kamchatka and the Sea of Okhotsk, perhaps even to the mouth of the Amur.

Only a more exact investigation would be able to make clear the extent to which elements of Eskimo culture have entered into this original North-east Asiatic Coast culture. BOGORAZ assumes that the detachable harpoon head employed by the Eskimo has reached the Amur along the coast of Asia. This, however, cannot mean that the North-east Asiatics first learnt the use of the harpoon from the Eskimo. The harpoon is an implement so widely distributed and so general, that we have no reason to believe that the North-east Asiatics have not always used it when hunting aquatic mammals. It only can mean then a specific kind of harpoon head<sup>1</sup>.

The distribution of the kayak has been mentioned. The seal hunting of the North-east Asiatics, which takes place especially in the spring and autumn but not in the winter on account of the conditions of weather, is therefore not carried on from kayaks but from open boats. The boats employed at the seal hunting are generally rather small, and hold two men, a rower and a harpooner, just as one knows it, for instance, from Japanese drawings of Ainos hunting seals<sup>2</sup>.

At the whale hunting, on the other hand, which originally no doubt played a larger rôle than the seal hunting, larger boats which hold several men are employed. The mode of procedure with whale hunting quite calls to mind the already mentioned mode of procedure with the Eskimo at Point Barrow and

<sup>1</sup> It is of interest to notice the likeness between this harpoon form from the Amur and the Eskimo form used for White Whale hunting even by the Polar Eskimo; cf. M. o. G., Vol. 34, fig. 35 and SCHRENCK, table 42, figs. 3—4.

<sup>2</sup> Cf., for example, MAC RITCHIE, fig. 114.

at Bering Strait. With the Coast Chukches and the Coast Koryaks, this larger boat was covered with skin, just as the umiak is. The form differs however, inasmuch as the first mentioned have an ordinary Eskimo umiak while the latter have a deviating form. With the Kamchadales and southern coast inhabitants the boats are, however, always of wood.

The employment of nets by the North-east Asiatics has still to be mentioned. They are not only used as fishing nets, but also for seal hunting. This seems especially to be the case in the autumn, when the seals go into the mouths of rivers<sup>1</sup>. The methods of setting the nets correspond with those employed by the Eskimo.

It would be impossible, however, to describe this North-east Asiatic Coast culture in detail, as it is but little known. Not least does this apply to the economic conditions and the annual economic cycle. For the rest it is only with reserve that we can talk about a Pacific-Asiatic culture; it is only the economic conditions connected with the sea which have a character common to the Palæasiatics of the coast and the fishing population of North Japan.

### The Islanders in Bering Strait.

As specially typical centres of Eskimo economic culture may be mentioned the small islands in Bering Strait, the Diomede Islands or Inalik, and King Island or Ukvivok. Moreover, the isolated settlements on the lofty western and south-western coasts of Seward Peninsula may in several respects be reckoned as belonging to the above. In contradistinction to the St. Lawrence these small rocky islands are inhabited by American Eskimo. The Islanders themselves were regarded by DALL as a distinct tribe (Okeeogmut), co-ordinate with the tribes on Seward, with the western groups of which they agree in linguistic and several other respects. They wear labrets, DESHNEV found this to be the case as early as in 1848, and they use the kayak, but are especially excellent umiak-men, and as such should here be pointed out as those who have brought the use of these water-craft, within the Eskimo culture, to the acme of perfection. To increase the sea-going power of the umiak they have introduced the probably original improvement of placing inflated seal-skins or flaps of skin on both sides of this, in order to heighten the gunwales in rough weather. With these improved water-craft they make trips between the two mainlands, and carry on a traffic which, even before the Russians had settled down at St. Michael, had brought Russian goods to America. The Reindeer Chukches obtained the goods by barter from the west, and sold them to the Asiatic Eskimo, who again sold them to the Islanders, receiving in exchange wood, reindeer skin, and ivory. This connection across the strait probably dates very far back, even if it has grown additionally active since European goods reached North-east Asia. In 1648, when SIMON DESHNEV sailed through Bering Strait, he found that the Diomede-islanders were making war against the Asiatic Eskimo. A further

<sup>1</sup> JOCHELSON, p. 542.

proof of the connection is the borrowing of articles of use (pipes, bird-bolas), and of words, which MURDOCH thinks he can prove to have been made from Asia.

From their umiaks the Islanders carry on walrus hunting, which appears to have been their principal means of subsistence. The ivory hereby procured they brought, as already mentioned, to Asia, but they were not contented with bringing the Asiatic goods to the nearest part of the American coast. Across Norton Sound they sailed southwards to Pastolik, near the mouth of the Yukon, where they met the Delta Eskimo. Northwards they sailed into Kotzebue Sound, the inhabitants of which undertook to convey the goods further to Point Barrow and Mackenzie. On these long trips sails were used. Nowadays a mast is set up amidships, and the sail, which is square, is stretched out at the top with a cross-bar. Originally, according to NELSON, they are said to have placed an upright on each gunwale, and fastened the top of a three-cornered sail to each of these. The fact that sails are used by these Eskimo is, moreover, mentioned from recent times by MURDOCH, and from older times by KOTZEBUE, who sometimes saw umiaks (*baidares*) with sails. Once he even mentions a flotilla of eight skin-boats with sails.

There can be no doubt that the use of sails has been borrowed from the Pacific-Asiatic coast people. It even seems that it came from rather far to the south among the latter. The description given corresponds closely to the mode of sail-carrying used among the Ainos, which they probably again have borrowed from the south, i. e. from Japan. (See for instance the excellent illustrations in Mac Ritchie, Pl. XIX, and p. 45).

Also the settlements of the islands have a peculiar character, lying as they do, so to say, pasted against the sides of the mountain, so that the houses almost have the character of pile dwellings, in that they appear to remind one most nearly of the form of the summer houses among the Kamchadales and Gilyaks, and should undoubtedly be explained as the result of a Pacific-Asiatic influence.

### The Yukon Eskimo.

The coast regions situated between the Seward Peninsula towards the north and the Aliaska Peninsula<sup>1</sup> towards the south is naturally divided into three parts. Near Norton Sound the coast is lofty as far as to St. Michael, and passes into a mountainous interior. From St. Michael to Cape Newenham, south of the mouth of the Kuskoquim, there is a low and swampy delta-coast. Lastly, around Bristol Bay, the country is again high and mountainous. The sea exhibits a corresponding peculiarity, being, off the delta, shallow over a large area, and this is especially the case off the mouth of the Yukon itself, between St. Michael and Cape Romawzow.

Between Norton Sound and that part of the Lower Yukon which has approximately a direction from north to south, there is a mountainous tract, the crest

<sup>1</sup> For brevity's sake I am here using the style of writing "Alaska" for the whole of the large North American peninsula, and "Aliaska" for the small peninsula which is continued in the Aleutian Islands.

or dividing ridge of which forms a boundary between the Eskimo and the Indians, the seaward side being Eskimo and the river-side Indian. In the district where the tributary stream Anvik rises, the Eskimo territory is narrowed even to a breadth of 20 kilometres; but after that it widens out enormously in the low, flat delta through which the Yukon and the Kuskoquim flow. Here the Eskimo do not disappear until at the beginning of the higher ground in 160° W. long. Here, the moment one sets foot upon the mountainous, wooded ground along the river, the skin boat is found to be replaced by the boat made of birch-bark, the dog sledge by the broad-fellied snow-sledge (toboggan), and the Eskimo by the Ingaliiks. South of the Delta the limit of the Eskimo goes east of the lakes Nushagak or Tickchik and Iliamna.

It is along the stretch of coast from Norton Sound to Bristol Bay that the transition from Arctic to Subarctic climate and form of culture is wholly accomplished. Norton Sound is still covered every winter with a continuous layer of ice; but in Bristol Bay an ice-covering rarely forms. In connection with this fact the dog sledge is only used in Norton Sound and as far as the Delta with its numerous freshwater arteries extends; not, however, further to the south than the Kuskoquim. This is also the southernmost point at which the most important animal which is hunted, the Ringed Seal, occurs in large numbers, "its range reaching the mouth of the Kuskoquim River, and extending thence in a westerly course across the sea in a line coinciding with the southern edge of the ice-pack."<sup>1</sup> The Bearded Seal is extremely rare further south than Bristol Bay. *Phoca vitulina*, on the other hand, is common everywhere, and formerly the Eared Seals were, in addition, hunted every summer; lately the latter have been hunted so largely that their occurrence is almost entirely restricted to the uninhabited islets St. Paul and St. George, and the Siberian islands, Copper and Bering Islands. The walrus is of no importance, and occurs more singly; but formerly, an abundance of young males of walrus used to arrive every summer at the more distant Aleutian north coast of Aliaska, WRANGELL<sup>2</sup> believed that they had been ousted by the old males which lived in northern regions.

The distinction which DALL made between the numerous Eskimo tribes in Western Alaska, and which was afterwards adopted by PETROFF, NELSON and others, is of no great interest in this connection. A difference of greater interest to us is that between the inhabitants of the lofty coasts of Norton Sound, where the settlements are located on islands and headlands, and the Delta Eskimo whose settlements are situated along the rivers.

OGILVIE and NELSON have described how life is spent at Norton Sound all the year round. In the spring months, March, April and May, or from the moment when the day becomes somewhat long until the ice becomes insecure, the men go out seal hunting on the ice, without, however, taking up their abode on it in snow houses. In early spring the Maupok method is used, but Utok hunting is the more important during spring. Later on, when the ice is inter-

<sup>1</sup> NELSON, II, p. 262.

<sup>2</sup> WRANGELL, p. 51.

sected by large cracks, the seals are hunted at the cracks, and the kayak, which the hunter takes with him on a sledge, is used to secure the booty, and to cross the cracks. During the first months of summer, bird hunting is carried on, as also salmon-fishing in streams. Late in July, and in August, the inhabitants from the southern part of Norton Sound and many Delta Eskimo assemble at the mouth of the Yukon and arrange a *battue* to kill White Whales, when, in their kayaks (baidarks), they surround them and drive them in towards the flat shore. This White-Whale hunting, which is pursued both at the Yukon and the Kuskoquim, is mentioned by several authors, and appears to play an important rôle, especially with the Delta tribes.

When the White-Whale hunting is over, the people from Norton Sound go up into the mountains for the purpose of hunting the reindeer, and when well into October the reindeer hunt is over, and the ice has begun to form along the coast, a great abundance of a kind of small torsk is caught through holes in the ice, partly with hooks and partly with a kind of tin-bait. During the darkest period they live and feast on the stored up supplies of fish, reindeer meat and blubber, as long as these last. Nowadays, during the long, dark winter-nights, some seals are caught in nets which are set out in the sea at the headlands of the coast.

OGILVIE<sup>1</sup> states, regarding these coast inhabitants at Norton Sound, that "they are in every respect superior to any tribe of Indians with which I am acquainted." Quite contrary to this favourable opinion are the accounts given of the standing of the Delta Eskimo. Thus, JACOBSEN writes that the inhabitants of the Delta between the Yukon and the Kuskoquim exhibit the highest degree of filthiness and, setting aside that as a rule they do not make fire and cook their food, live in wretched caves the interior of which, especially during spring-time, resembles a morass. From MC GRATH and J. H. TURNER, who were staying there during 1889—1891, we have the following description<sup>2</sup>. "The inhabitants of the banks of the Lower Yukon are perhaps the most destitute Indians<sup>3</sup> in Alaska. They have no idea about personal cleanliness. During the regular flooding of the Yukon Delta in springtime they flee in their boats, in order, immediately on the fall of the water, to return to their miserable damp huts which really do not dry up the whole year through. Partly this and partly the almost exclusive fish diet," the author thinks, causes diseases.

A Swede<sup>4</sup>, whom JACOBSEN found residing in the Delta as manager of a trading station, gave the following description of the inner Delta: "In the summer the monotonous plain of the Tundra is broken by numerous lakes and dams, and by silver shining rivers, brooks and tributaries, so that one relatively easily finds one's way there, but in the winter land and water constitute one single monotonous surface covered by a white carpet which for hundreds of

<sup>1</sup> OGILVIE, p. 137.

<sup>2</sup> LINDENKOHL, p. 136.

<sup>3</sup> Here "Eskimo Indians" are meant, American authors often using the term "Indians" in a sense also including the Eskimo.

<sup>4</sup> WOLDT (Norwegian edition), p. 280.

miles spreads over the plain like a shroud, while the sky, which generally is overcast, is arched over it all like a changeless, grey bell. No tree, no bush shows the way for the traveller, no house and no totem pole beckon kindly in the distance. Only the flat roundish Eskimo huts project a few feet above the plain, if they are not entirely hidden in the snow which often happens."

The fauna of the Delta is characterized especially by its wealth of fishes and by its numerous migratory birds during summer. On the other hand, the reindeer is no longer found between the Yukon and the Kuskoquim, and it is, on the whole, rather doubtful whether these swampy regions with their predominantly mossy vegetation were ever liked by the reindeer herds that are found to this day immediately north and south of the Delta. After the Mackenzie Eskimo, there are no Eskimo who are provided so easily and abundantly with wood as the people at the Yukon and Kuskoquim, which rivers come from forest regions and carry drift-wood. According to WRANGELL the mouths of the rivers may even at times be blocked with tree trunks.

The chief article of food is, as already mentioned, fish. JACOBSEN<sup>1</sup> reports about this that the dried and slightly smoked salmon (Yukala) is the chief article of subsistence. --- "They are ichthyophagists in the real sense of the word." Those families who neglect to put by stores of fish suffer famine during the winter. On the other hand, the Yukon Eskimo have not, like so many of the hitherto mentioned groups, the opportunity to carry on reindeer hunting largely in the autumn. Fish is, therefore, their only stored-up food apart from the blubber from seals which were hunted on the coast-ice in the spring, and White Whale which was hunted in the late summer. In this way the Delta inhabitants visit the sea twice a year. In the spring the journey is made in a dog sledge, for which reason they have to be back before the river ice breaks up. On the second journey the kayak is used.

It is very doubtful, however, whether this description applies to the Eskimo who live at a greater distance from the sea. Probably these live in their settlements all the year round, where, like the Indians at the Yukon proper, they carry on fishing from the open waters during the summer, and from openings in the ice during the winter; but as they are without the Indians' hunting of big game, such as elk and reindeer, as also the eventual seal and White-Whale hunting of the coast inhabitants, their means of subsistence is more scanty, and their life more monotonous, even if their existence is sufficiently assured by reason of the great abundance of fish in the many arteries and lakes. According to PETROFF one could as late as in 1880 reckon over 6000 real Delta inhabitants.

One must by no means confound this more monotonous and indigent existence with a primitive state of culture, as RINK has allowed himself to be beguiled into doing. The culture in the unattractive swamp delta with the easy access to fish-food and unnecessariness of carrying out most of the Eskimo occupations is not characterized by primitiveness, but by decay. The implements

<sup>1</sup> WOLDT, p. 190.

and the observations of a social kind which one has from the Delta inhabitants show that they are in possession of a specialized Eskimo culture, which already, as regards all South-West Alaskan-Eskimo, is so strongly maintained by MURDOCH in his criticism of RINK's theory about the origin of the Eskimo.

It cannot be said, either, that at the Yukon the Eskimo have a transitional form between Eskimo and Indian culture. On the other hand, the Eskimo culture from the Yukon and southward has adopted some Indian and also Asiatic traits, so that, as opposed to the northern forms, it has in many respects had a new and heterogeneous stamp impressed on it. Amongst such heterogeneous features may be mentioned the dress, in that the fur jacket is distinguished by its length, and by frequently being without a hood, as also by being made from the skins of martens, ground-squirrels or birds. Instead of the hood, the North-west Indian hat of platted vegetable fibres and roots is now met with in the southern Yukon region, Kadiak and the Aleutian Islands. A North-east Asiatic influence manifests itself in the building of the houses, in that here one finds the Palæasiatic earth-house, which is still employed in Kamchatka. Indian influence, no doubt, especially appears in social and religious matters, inasmuch as, partly, and after the plan of the North-west Indians, a real tribe-formation begins and partly a down-right adoption of Indian customs takes place, such as their way of burying the dead in common burying places, with the corpse in a wooden coffin<sup>1</sup>, and also the great distribution of gifts at the festivals<sup>2</sup>. Of late there has also been occasion to observe this influence from the south. When the Russians came to Yukon only the kayak for one man was known, but the kayak for two men customary at Kadiak and the Aleutian Islands gradually gained ground. That the single-bladed and double-bladed paddle was used with the kayak indiscriminately can probably also be referred to the greater contact with the Indians, but what RINK assumed, that the single-bladed paddle is predominant here, is by no means correct. On the contrary, everything points to the fact that it plays a subordinate rôle. Finally it must be mentioned that a kind of fish-trap<sup>3</sup>, which during summer and especially during winter is of great importance in the Delta, must probably originate from Asia. It is not found further north than Norton Sound, and at the Yukon not above the mouth of the Koyukuk<sup>4</sup>. This distribution, together with the fact that it is not known in the interior of Alaska or in the Hudson regions, indicates that the fishing apparatus has come to the Yukon Eskimo along the coast, and from them to the nearest living Indians on the Lower Yukon from the Delta to Nulato at the mouth of Koyukuk. The same group of Indians has been influenced in the same way as regards house building, in that they use the same form of house as in the Delta, and, as there, collect the houses in settlements. A further description of these matters is not to be given here, however. It will only be mentioned

<sup>1</sup> Cf. BAHNSON, II.

<sup>2</sup> SAGOSKIN, p. 552.

<sup>3</sup> OGILVIE, pp. 171 sqq.

<sup>4</sup> OGILVIE, l. c.

that the Indians in the Yukon valley, on the stretch which runs parallel with and close to the east coast of Norton Sound, have, therefore, in some respects imitated the Eskimo.

### The Kadiak Eskimo.

The Yukon Delta and the sea region east of Bristol Bay is the last large territory which is occupied entirely by the Eskimo. Certainly they are still found on a stretch along the coast of the mainland, but they are in scattered groups, between which other people push in. The Aliaska Peninsula is, properly speaking, Aleutian. On the north coast, according to PETROFF's map, the most eastern Aleutian settlement lies at the mouth of the Ugashik River (about  $157^{\circ}30'$  W. long.). On the south coast the Aleuts hardly reach so far, inasmuch as their eastern boundary is Cape Ivanoff (about  $159^{\circ}30'$  long.) and the Shumagin Islands. The remaining part of the south coast of Alaska as far as the beginning of Cooks Inlet, the south west point of the Kenai Peninsula, the islands in Prince William Sound and also Kadiak with the surrounding islands are again Eskimo, and finally the same applies in part to the little isle Kayak, which is inhabited by a small tribe which in the summer carries on salmon fishing on the coast of the continent between Copper-River and Icy Bay ( $141^{\circ}25'$  W. long.). This tribe uses the Eskimo skin boats and hunting implements, but its language is so Tlinkitically intermingled that its root sometimes has been supposed originally to have been Tlinkitic.

The coast of Cooks Inlet, the large indentation west of the Kenai Peninsula, is not inhabited by the Eskimo, but by a Kenai tribe closely connected with the Ingaliks; the members of which like their kinsmen on the Lower Yukon have been strongly influenced by the Eskimo culture<sup>1</sup>. They use the kayak for hunting White Whale, which, in rather large numbers, resort to the lower parts of the bay. The animal, however, is not hunted direct from the kayak, but the hunter places himself on a staging of poles erected in the water, from which he hurls his lance, which has a slate head. When an animal is hit, he gets into his boat which he has ready and pursues it. Large whales, which also visit the bay, are not hunted by the Indians. When, in August, the whale hunting and the salmon fishing, which are carried on at the same time, are ended, they wander up in the mountains, where they hunt reindeer and mountain-sheep. In September or October they set out in canoes, which they have covered with raw reindeer hides, down the Suchitna River back to Cooks Inlet, where the winter is passed in earth covered winter houses which, judging from JACOBSEN's description, are of quite the same kind as the Eskimo houses on the Yukon and in Kadiak. This, then, is the third case of a non-Eskimo neighbouring tribe partly adopting the Eskimo culture.

The coast of the mainland between Mount St. Elias and Aliaska (from  $141^{\circ}$  to  $159^{\circ}$  W. long.) is on an average high and rocky, and much indented, with large and small bays. Close out to the coast run chains of mountains which,

<sup>1</sup> WRANGELL, pp. 103, 112 sqq.

especially towards the east, attain considerable heights, and do not leave room for a lower coast land. Such only occurs round the mouths of the Suchitna and Copper Rivers, and is like the river valleys of these, which form the only passages to the interior of the mainland, both inhabited by Indians.

Among the islands which are of a similar rocky nature as the mainland, the most important is Kadiak, the population of which may be regarded as being the type of these Pacific Eskimo. The climate is coldly temperate and damp. The sea, which is controlled by warm sea currents, never freezes, and even in the bays the strong tides prevent the forming of an ice covering. The southern mountain slopes to the east of Cooks Inlet are covered with beautiful forests, and the same is the case everywhere in Kadiak and the islands in the more protected valleys, whereas the south-east side of Aliaska is devoid of forest. The mammals of the continent do not play any rôle for the Eskimo of this region, as the Indians are in possession of the mountain districts and the river valleys where reindeer, mountain-sheep, and elk may be hunted. Thus the Eskimo are reduced exclusively to river and sea fishing, as also hunting of the aquatic mammals. As long as they have been known salmon and cod, which were caught in great quantities and, when dried, stored for winter supplies, have been their principal article of food. When the Russians arrived, three kinds of aquatic mammals were hunted: seals, whales (especially a species of *Balaenoptera*), and the sea-otter. For hunting the two last-mentioned the two-man kayak (the baidare) was used. At the whale hunting a lance with a broad-bladed point of slate was used. When the hunter, who sat in the bow of the boat, had flung his lance, the object was to make a hasty retreat. During the animal's writhings the slate point broke off and remained in the wound. The prey was left entirely alone and to its fate, until one day it was washed ashore. Naturally many may be lost in this manner; but for the rest the hunters believe that wounds caused by slate spears prove fatal more quickly than those caused by iron, and they have stuck to the slate-blades obstinately. With sea-otter hunting, the hunter always used a bow and arrow, the latter really being a small harpoon, the point of which was connected with the shaft by a line. The hunting was not carried on by single baidares, but as a *battue*, in which about one hundred boats took part. Originally sea-otter hunting was of slight importance to the natives compared with later times, when the Russians bought up the skins. Then the hunting of the sea-otter was taken up to such a degree that in the course of some decades it became almost exterminated.

Originally it was also possible to hunt Eared Seals here, but now, at any rate, they have disappeared. Of the real seals, according to NELSON and TRUE, *Phoca vitulina* is the only kind which occurs in large numbers. Besides in the Bering Se, ait is also common along the Pacific Coast east and south of the Aleutian Islands as far as the southern point of the Alaska territory. At Kadiak seal hunting takes place exclusively from a kayak, and from HOLMBERG's report it seems to be evident that the bladder-spear plays a predominant rôle. Sometimes the hunter places a stuffed seal on the rocks as a decoy, and himself remains hidden in the neighbourhood until a seal has been enticed to creep out of the water.

Of hunting implements HOLMBERG observed altogether 6 kinds, the bladder-spear, two kinds of spears and harpoons for whales and seals, two sizes of arrows for hunting sea-otter and bear, as also the three-four pointed bird-spear. Besides being shot from a bow, the bird-spear was thrown with a throwing board, and this latter method was exclusively the case with the bladder-spear and the harpoons. As material for the implements drift-wood was preferably used, the home kinds of wood being found practicable only for building houses.

The winter house is an earth house similar to the one at the Yukon, and the summer dwelling is the skin-tent of the "Tipi" type. Besides the baidark and the baidare (one-man and two-man kayak), the Kadiaks and the neighbouring tribes on the continent used the umiak, which was at times so large that it could hold 30—40 persons. Before the arrival of the Russians it was used principally as a war-craft, as war between the tribes at that time was the order of the day. The dress was almost similar to that at the Yukon. The Russians paid the greatest attention to the long fur coat, the "parka," which was made from the skins of birds, sea-otters or ground-squirrels (*Spermophilus* sp.), and also to the "kamleika" which was of seal-gut, and was used in the kayak. As at the Yukon, the "parka" was without a hood, and as a head covering at sea the platted hat was used.

When the Russians towards the middle of the 18th century began to occupy Kadiak, they here found a comparatively numerous Eskimo population. When SCHELIKOV, about 1760, gave the number of inhabitants on the island as 30,000, it was, however, evidently an exaggeration. Even if the Russians at the beginning behaved rather cruelly and roughly, the population can hardly be assumed to have been so high. In 1760 the number is given as 6,206 individuals; but in 1880 the island had only 1262 Eskimo inhabitants besides some few so called creoles. That a great decrease in the population has taken place one must consider as granted, and also, as regards culture, that so much was lost and changed even in the first decades of the intercourse with the Russians that it is difficult now to form an exact view of the original conditions. The first Russian authors mixed up the Kadiaks and the Aleuts without further ado. Later, when the great linguistic difference was perceived, the name Konjag was introduced, which is said to be a distortion of the Kadiak's self-designation "Kanagist<sup>1</sup>."

A few general remarks may be made, however, on the Eskimo culture at Kadiak and the neighbouring regions. Firstly that the North-west Indian influence is stronger here than at the Yukon. This especially manifests itself in the structure of the community, inasmuch as here, as with the North-west Indians, we find class distinction, slavery and also a distinct tribe formation with chiefs and war expeditions. This influence has manifested itself less in the material culture, where it must be looked for in the ornamentation and decoration of the implements. The implements themselves are purely Eskimo. Of the two characteristic possessions, the "baidare" and the whale-lance with slate head, the first seems to be an original alteration of the kayak, whereas

<sup>1</sup> BANCROFT, Vol. I, p. 69.

the invention of the latter is more obscure. The next point to be emphasized is that between the South Alaskan Eskimo on the one side and the North-west Indian Tlinkites on the other side there is no transition, but a sharp contrast. All judges of the Kadiaks have agreed in assuming that they came from the north. WRANGELL<sup>1</sup> advances their own traditions for it. ERMAN<sup>2</sup> draws attention to the fact that, as they use the skin-boat in the neighbourhood of richly forest covered districts, this can only happen on account of tradition. Finally MURDOCH<sup>3</sup> asserts that the using of the sinew-backed composite bow by the Eskimo in Kadiak and South Alaska is a proof that their culture germinated in regions lacking wood, or, in other words, in Arctic regions. As a further proof of this may be mentioned the stated traditional predilection for drift-wood for implements.

### The Aleuts.

The peninsula of Aliaska together with the chain of islands which form the southern boundary of Bering Sea is, geologically speaking, a continuous series of volcanoes. The country is high and mountainous, and the coasts are irregular and rocky. The climate is comparatively mild, but damp and raw, with much fog and a considerable rain-fall, and storms prevail at certain seasons of the year. It is rare for the bays to be ice-covered, and then only until the first strong wind occurs. Woods are wanting, so that the inhabitants are chiefly dependent on drift-wood. On the north coast, and on a part of the south coast of Aliaska, as also on the group of islands as far as the island of Attu (53° N. lat., 187° W. long.) there lives a tribe, the people of which are also called Aleuts by the Russians, while they originally called themselves Unung'un (human beings, or people).

From a linguistic point of view they occupy a peculiar position as compared with the Eskimo, while culturally they stand on the same plane of development as the inhabitants of Kadiak, where the geographical conditions are in several respects the same. But here too, the conditions are nowadays so greatly altered through the influence of the Russians, that the Aleuts described by ELLIOT do not greatly recall the Aleuts of an earlier date. The present Aleuts have a strong mixture of Russian and American blood. They gave up using their old skin clothes a long time ago, as they did the custom of wearing labrets, and the use of the meeting house (kashim), which was originally found in every settlement. The introduction of Christianity was synchronous with the disappearance of their festivals and peculiar dances, in which men and women danced separately, with their faces covered by painted wooden masks, which were usually carved in fantastic forms.

But the European culture has not been able to influence their means of livelihood or their "economical culture" to any great degree. As before the

<sup>1</sup> WRANGELL, pp. 117, 124.

<sup>2</sup> ERMAN, p. 169.

<sup>3</sup> MURDOCH, II, p. 130.

discovery, so now, fishing and the hunting of aquatic mammals form their only occupation, and the Aleut's food still consists chiefly of dried or raw fish, and of sea-urchins and other testaceous animals. Fish is caught with hook or net, and in this region, where the sea is never frozen over, the aquatic mammals can only be killed from kayaks, therefore in the Aleutian Islands it has always been, and is to this day, a necessity for every man to be a clever hunter. The use of the kayak for one man (the Baidark) requires the usual appurtenances, viz., a water-tight jacket, double paddles, throwing boards and harpoon. As regards the skill with which they manage their water craft, the Aleuts are equal to the Greenlanders, and VENJAMINOV expresses his admiration in his remark, that he does not know "whether the Baidark was created for the Aleut or the Aleut for the Baidark." The Baidare or two-men's kayak is used just as at Kadiak for hunting the sea-otter and the whales, which aquatic mammals are hunted with bow and arrow and slate-bladed throwing lance respectively. The kayak for three was not an original form, but came into existence, through Russian influence, as a quick and convenient travelling-boat that could hold one passenger and two paddlers. The umiak is now rare, and has probably, as at Kadiak and in Prince William Sound, been used for purposes of war as well as for travelling.

After the Aleuts were discovered on BERING's last voyage, and had again been visited in 1745, a long time elapsed before the Russians discovered that the people they met on the Aleutian Islands and on Kadiak belonged to two different tribes. For a long time they designated them commonly as Aleuts, and it was as late as about 1785 that SCHELECHOW observed that a decidedly linguistic difference existed between them. VENJAMINOV, who lived from 1824 to 1838, partly on the Aleutian Islands and partly on Sitka, proved this definitely.

VENJAMINOV, on the basis of tales and myths which, however, he has misinterpreted (cf. for instance PETROFF), tries to show that the Aleuts are of Asiatic origin, and the Aleutian Islands have often been made to serve as that bridge across which a stream of people immigrated from Asia to America. Even if one sets aside the language, which is of a type similar in construction to the American language, the cultural conditions, and the opinion current among the tribes themselves that they originated from the east, the idea of an immigration from Asia can be dismissed by simply referring to the close geographical connection with America and the distance from the other continent, as also to the fact that the western islands in the chain are, and have always been, uninhabited. The kitchen middens and other evidences of a former population, which DALL has investigated and demonstrated, cease simultaneously with the present colonisation of the island of Attu<sup>1</sup>.

The next interesting and important question which presents itself concerns the reciprocal relation and kinship of the Aleuts and the Eskimo. That the Russians failed to see the difference between them was due to the mate-

<sup>1</sup> DALL III, p. 43.

rial culture, which, so to speak, was similar in all respects, and to the racial characters, which also differed in no great degree. On the other hand, the linguistic difference is so great that Aleutian cannot be regarded as a branch of the Eskimo language, but must rather be regarded as collateral with Eskimo, perhaps even with such linguistic groups as the Tinne and Algonquin. It is divided into a western and an eastern dialect, Atkic and Unalaskic, which, however, do not differ greatly.

J. H. E. BUSCHMANN expresses the results of his investigations of the Aleutian and other North American languages as follows: "Ich kann das wichtige Endresultat meiner Untersuchung verkündigen: dass, entgegen diesem gemeinsamen Stoffe, sich das aleutische Idiom (man kann so über beide Dialekte absprechen) in seiner Masse, durch den Besitz ganz anderer, eigenthümlicher Wörter, als ein eigner, von dem grossen eskimoischen ganz verschiedener Sprachtypus erweist." BRINTON<sup>1</sup> contests this view, he says regarding the Aleuts that it may be regarded as a positive fact that their ancestors "populated the islands from the American and not the Asiatic side. Not only do their own traditions assert this, but it is confirmed by the oldest relics of their culture, which is Eskimo in character, and by their language, which is generally acknowledged to be a derivative of the Alaskan Eskimos." In support of the phrase "a derivative of the Alaskan Eskimos" BRINTON cites H. WINKLER (p. 119) and W. H. DALL (III, p. 49), and writes regarding the latter, that DALL "states that their tongue is distinctly connected with the Innuits of Alaska." But on looking up the passage in question in DALL, one finds that he expresses nothing definite regarding the relationship, nor does he state that Aleutian can be derived from Eskimo. DALL, after having shown that the Aleut-culture is a particularly specialized Eskimo-culture which owes to the natural conditions its — according to his opinion — higher and finer development, goes on to say that "this improvement is evident, among other things, in the greater development of the possibilities of the language, in its more perfect grammatical construction and in a more perfect numerical system." It must be these words to which BRINTON alludes. But it is evident that the development DALL is thinking of here relates to the culture, and that nothing is said about the genetic relationship of the two languages. Then, on looking up WINKLER, it is impossible to understand the passage in question as BRINTON would have us to understand it. In his enumeration and treatment of the North Asiatic languages WINKLER mentions also the Eskimo language, regarding which he writes, *inter alia*, that it is more closely related to the American languages than to the Ural-Altaic languages. After that the Yukagiric language is inserted, and lastly comes the Aleutian, regarding the relationship of which he only writes: "Trotz des vielfach hervortretenden uralaltaischen Anstrichs ganz selbständiger Sprachtypus .... doch auch der Auffassung nach wesentlich vom uralaltaisch abweichend". Nothing is said about relationship to the Eskimo language, which, for the rest, is not referred to when he mentions Aleutian. We may then safely

<sup>1</sup> BRINTON I, p. 66.

state that the named linguists have not brought forward evidences of a closer relationship between Aleutian and Eskimo, and philology seems still to be in the same position in this matter.

When BAHNSEN, who usually relies on DALL and RINK, states that "the Aleuts have, in a far-off past, separated from the Eskimo and developed themselves independently on their islands," it can in no circumstances be possible that such a separation has taken place after the Eskimo culture had come into existence. It would be absurd to believe that so decided a linguistic separation should have occurred between the inhabitants of the western and eastern parts of Aliaska, where, moreover, the closest contact existed between the two, and then that the Angmagsaliks and the Yuits, the Labradors and the Kadiaks should still speak almost the same language. In reality only two possibilities are left. Either the Aleuts themselves have invented the kayak, harpoon, etc., independently of the Eskimo or their culture has been borrowed from their neighbours at a later period. When the latter migrated from the north along the coast of Alaska they encountered the Aleuts at some definite period, and communicated to them their peculiar culture. Consequently, one must surmise that the Aleuts stand in a similar relation to the South Alaskan Eskimo as the Coast Chukches do to the Asiatic Eskimo, and there can hardly be any doubt that the last-mentioned opinion will prove to be the only right one.

This opinion is contradicted by the assertion that the oldest remains of the culture of the Aleuts have been proved to originate from an Eskimo culture. It is not difficult, however, to show that this assertion is incorrect.

From the finds made in the numerous refuse-heaps from Alaska to Attu, investigated by DALL, it appears that the cultural remains are found in three layers, which are fairly distinctly separated, and correspond to three cultural periods: —

- I. The sea-coast period which is chiefly represented by Echinus-shells.
- II. The fishing period, in which fish bones form the principal feature.
- III. The hunting period, in which bones of mammals occur.

At the transition to layer II sinkers for fishing-nets begin to appear, and probably the introduction of the fishing net is the principal difference in culture which corresponds with these two layers, after which testaceous animals cease to be the chief article of food, and are of comparatively minor importance in the daily fare, of which fish now becomes a highly important item. Therefore there is a sharp boundary between the Echinus-layer and the layer with fish bones, even if the use of testaceous animals as an article of food never wholly ceases at any point of time. Fish continues, however, to be the main constituent of food down to the present time, and so fish bones are not only predominant in the layers of the fish period, but are also found in quantities in those of the hunting period. The latter layer was found wherever excavations were made. The layer varied in thickness in the different places, and many of the heaps contained this layer only, which DALL regarded as testimony of the population having increased in numbers.

That the transition from the sea-coast period to the fishing period is not due to a gradual development, but is occasioned by the fact that, somehow or other, a new culture-element, the fishing net, was introduced, really can hardly be doubted. On the other hand, some authors, and among them BAHNSEN, are of opinion, that from the beginning of the fishing period to the arrival of the Russians a constant and gradual development from fishers to hunters has taken place, and he mentions, in support of his opinion, that during the hunting period there has been a transition from the implements of former times to the later Eskimo form of implements. This is quite right; but the main point to be remembered is, that these previous forms of hunting weapons are not mere lance-heads, but real harpoon-heads of an older Eskimo type. These bone harpoon-heads occur suddenly at the transition to the layer of the hunting period, and it should be remembered that on the Aleutian Islands these forms are used to this day, along with the more perfect and skilfully made harpoon-heads of more recent date. Consequently, this development in the form of the implements does not differ from that which has also taken place among the Eskimo themselves, and which may be traced up, for instance, in Greenland.

These observations alone, appear to favour the belief that the transition from the fishing to the hunting period must likewise be due to the introduction of new elements of culture, which in this case must be harpoons and kayaks, as here the use of the harpoon would be impossible without the kayak. It is probable, of course, that even the Aleutian fishers possessed a water-craft, but it was not the kayak with its appurtenances. The only probable surmise as to how they have come into possession of this highly complicated contrivance is that they have borrowed it from the Eskimo. As they gradually taught themselves its full use and utility the mammals would play a more and more important part where food was concerned, and their skin would become an important factor in the making of boats, clothes and houses. This view is supported by the fact that such implements as are used for skin dressing are not found until the lower layers, which belong to the hunting period, are reached.

DALL himself was of opinion that the boat of the fishing period gradually developed into the kayak, but that the former, owing to its having been very simple and without any ornamentations, had not left any such traces as the kayak had, of which some of the small ivory pieces for the paddles, and other ornaments, are found in the layers of mammal remains. But, in reality, such a development quite lineally is inconceivable in the case of the sea-kayak, the use of which necessitates the co-operation of so many heterogeneous elements, such as harpoon, throwing-board, lance, etc., each of which necessarily must have had its own history of evolution before it was taken in use on the kayak. Besides, DALL's own investigations of the layers of mammal remains show distinctly that the Aleuts immediately began to hunt aquatic mammals, the pursuit of which required the co-operation of the kayak and harpoon, *i. e.* the fully developed sea-kayak; the bones first found in the kitchen middens being those of the Eared Seals (Sea-bear and Sea-lion), two *Phoca*-species, *Phocaena vomerina*, *Delphinus orca* and in some places of the walrus. Only in the upper layers

of mammal-remains do there occur, in addition, the bones of the larger whale-species, such as *Balaena mysticetus*, *Balaenoptera velifera* and *sibbaldii*, the Californian Grey Whale (*Rhachianectes glaucus*), and the Cachalot or Sperm Whale.

It is evident from this succession of layers, that the kayak must have existed during the whole of the hunting period, and that it must have appeared rather suddenly on the scene. And only one possible explanation is in accordance with this view, viz., that the kayak has been borrowed from the Eskimo.

Another point of interest is apparent from the succession of the layers viz., that the hunting of the large species of whales with baidare and lances with slate blades, — which is also known from Kadiak, but which has not extended further north than Aliaska, — is a method of hunting of rather late occurrence. This conclusion is justifiable, as both the bones of the animals hunted and the hunting weapons, the whaling lances with slate blades, occur late in the succession of layers. Other interesting observations may be made on DALL's investigations, but I shall refrain from further comment, as the sole task we have set ourselves here has been to elucidate the fact that the Aleuts are members of an originally independent tribe which adopted the implements and hunting methods of the Subarctic Eskimo.

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## A Comparison of the different Types of Eskimo Culture.

### The Eskimo Territory a Unity as regards Communication.

ON surveying the description of the types given above, in which I have tried, geographically and ethnologically, to separate the component parts of the economic life of the Eskimo, there is an observation which once more calls for attention, viz., that nowhere between two groups has there been a boundary so strong that it has not now and then — if not regularly every year — been crossed by means of sledges in the Arctic regions or by boats in the Subarctic.

It has already been mentioned that, right down to our own day, there ran through Northern Alaska and along the coast of the Arctic Ocean an indigenous trade-route which connected the Mackenzie Eskimo with the regions towards Bering Strait. From the Mackenzie region to Coronation Gulf, from the latter to the Netchillik territory, and further eastwards to Baffin Land and Labrador, various travellers have found evidence of contact having taken place.

In certain cases, where the connection has been broken off in recent times, the cause appears always to lie in the fact that one of the groups has come under a strong and solely European influence. As an example may be mentioned the connection across Melville Bay in Greenland. The connection between the American Archipelago and Greenland forms an exception. This appears to have been now and then really broken off for anthropogeographical reasons, the Eskimo having decimated the musk-ox herds along the so-called "musk-ox route"<sup>1</sup> straight through the Archipelago from south to north and north-east. But as the musk-ox herds have not been entirely exterminated, they will be regenerated when the Eskimo are there no longer, and then there will be possibilities for an immigration of new groups of Eskimo. It appears, however, that these wanderings must have taken place especially from the Archipelago to Greenland; a movement in the opposite direction has undoubtedly been of rare occurrence, if it ever has taken place.

The first result, then of the present analysis of types is that the Eskimo region, in, spite of its extent, hangs together

<sup>1</sup> Regarding this cf. M. o. G., Vol. 34, pp. 393 sqq. and map on p. 401.

as a unity, so far as communication is concerned. Or, to put it more exactly, did so until the white man disturbed the existing conditions. Consequently, it was possible for a new cultural feature which had originated in, or been introduced into, one place to be transmitted to all the Eskimo.

### Geographical Adaptation and Pacific-Asiatic Influence.

Analysis of the types of culture described above makes it evident that the cultural dualism, shown in the summer and winter pursuits respectively, is based upon geographical conditions; and, further, explains why the annual economic cycle varies so greatly from group to group.

A closer consideration will, however, show that also the other main reason for cultural development, viz., culture-contact or influence from without, must have co-operated in the development of at any rate certain sides of the economic culture of the Eskimo.

This is seen by comparing the Point Barrow Eskimo and the more westerly and still Arctic culture-groups in Alaska and on the Chukche Peninsula with the central Arctic groups in the Archipelago (Coronation Gulf and Netchillik).

Among the latter the summer is spent in hunting and fishing in the interior (kayak, lance, bow, arrow and fishing spear), and the winter in hunting on the ice (dog sledge and harpoon). Among the Point Barrow Eskimo and their neighbouring groups the same is found to be the case; but, in addition, the summer has provided a quite new occupation, which, as regards the season, collides with the inland-hunting, viz., whale hunting from umiak, and the winter has likewise provided a quite different method of acquiring a livelihood, viz., the catching of seals with nets.

The question now is, whether the Eskimo themselves have developed these pursuits, or whether they have borrowed them from without. Even the consideration that, in comparison with other Arctic groups, they represent a duplication of the methods of obtaining food may favour the belief that they have been borrowed. That they are younger than the other methods there can be no doubt, among other reasons, on account of their higher technical nature, and because they demand greater social co-operation. Since we know that the capture of seals with nets is carried on by the Pacific Asiatics along the Asiatic coast of the Northern Pacific Ocean, the only reasonable solution of the problem is furnished by the assumption that it is the Eskimo in the regions about Bering Strait who have learnt to catch seals with nets from the Pacific Asiatics, and not *vice versa* (in all probability it is from the Pacific Asiatics that the Eskimo have on the whole learnt the use of the net and not from their North American neighbours). Moreover, everything

shows that the whale hunting from umiaks carried on by the Eskimo along the west and north coasts of Alaska is borrowed from the Pacific Asiatics. We have here the same alternative before us as in the case of the catching of seals with nets, in that we must presume that the one group of people have learnt from the other. We now know that whale hunting is old and of great importance among the Pacific Asiatics. This applies not only to the Coast Chukches and Coast Koryaks, but also to the Kamchadales — even STELLER<sup>1</sup> records whale hunting among these — and lastly to the Ainos and the coast inhabitants of Japan.<sup>2</sup>

Among all these coast peoples whale hunting is carried on from large boats, which hold a number of paddlers. Among the Koryaks these boats are made of skin, like the Eskimo umiaks, although they differ somewhat in type. Among the more southerly coast people, on the other hand, wooden boats are used. The small boats used for seal hunting are also made of wood — originally they were made by hollowing out the trunk of a tree; they have at the stern a paddler and in the bow a man who hurls the harpoon.

That the Eskimo's net-catching of seals and whale hunting from umiaks are originally borrowed from the Pacific Asiatics cannot very well be doubted. Even MURDOCH emphasized the fact that net-catching had come from Asia, and as a proof he stated that the Point-Barrow Eskimo's designation for nets was according to his opinion of Chukchee origin, and that they have traditions of a time when they captured seals with the harpoon alone.

I must however also presume that the umiak has been borrowed from the same source, and has probably been introduced at the same time as the whale hunting, because the Eskimo required a large boat for this purpose. Whale hunting is, on the whole, the only occasion on which the umiak plays a direct rôle as regards gaining a livelihood. Otherwise the umiak is used only for travelling, and for this reason has degenerated into a contrivance to be used by women, "a woman's boat" (except on Kadiak where it was also used as a war-craft). Now it is quite unlikely, or, to put it more exactly, inconceivable that the Eskimo, at the outset and during their struggles to adapt themselves to the new natural conditions, should have created two such widely different water-craft as the kayak and the umiak, and both so highly developed. This would simply militate against the biological "principle of least action (in this case: least labour)," as, to begin with, they would be able to suffice with the kayak.

It must, of course, be left for later consideration whether the Eskimo themselves have produced the umiak by imitating the large boats and using the material at their disposal, or whether perhaps the Coast

<sup>1</sup> STELLER, p. 102; pp. 108 sqq.

<sup>2</sup> KAMPFER, pp. 150 sqq.; P. de CHARLEVOIX, II, pp. 578 sqq.; W. HEINE, p. 57; cf. MURRAY's *Handbook for Japan* [London, 1903], p. 252.

Koryaks have produced the large skin-boats which have then been adopted by the Eskimo. The nett result will be the same, that the Eskimo umiak first appeared in the regions about Bering Strait, and that it is due to the cultural influence of people living on the Asiatic coast of the Pacific Ocean.

That the Eskimo culture has also been influenced by other neighbouring groups must be taken for granted; but there can hardly be found any other group which has influenced the Eskimo economic culture so radically as have the Pacific Asiatics, who for practical reasons, are here reckoned as a single geographical group.

If, now, the umiak and the capture of seals with nets had been found among all the Eskimo, from the west to the east, there would have been no difficulty whatever in assuming that these things were borrowed from the Pacific-Asiatics. But then in the Archipelago there is a break in their occurrence. The umiak occurs among the Mackenzie Eskimo, disappears among the Eskimo in the Arctic Archipelago, and then reappears in Baffin Land and Greenland south of Melville Bay.

Nevertheless we must assume a distribution from the West Eskimo to the East Eskimo regions. Firstly, it is sufficient explanation for the absence of the umiak from the central regions, that there was no use for it; and for the absence of the net, and net catching, that it was not possible to obtain the necessary material for its manufacture, *viz.*, whalebone. Secondly, within the unity in communication formed by the Eskimo region, there can have been no real barrier for the distribution in question.

The fact should be remembered that here we are not dealing with a population consisting of groups which differ widely as regards language and tradition, and where a distribution meets many hindrances, but with a people which has a close affinity of language, and is not separated into well defined tribes. The different groups, which, more particularly only in Alaska — presumably on account of Indian influence — present the characteristics of true tribes,<sup>1</sup> are not separated by linguistic barriers and are generally not even hostile to one another. Properly speaking, the groups occur as unities only by reason of their being geographically separated from one another. The sociological group-organisation does not extend beyond the settlement, a fact first demonstrated by RINK, and afterwards finely and more fully treated by MAUSS and BEUCHAT. But the organisation of the groups was not so fixed, or so hostile to others, that it prevented visits being made during the favourable seasons of the year, or the admission of new members, or other shifting taking place in the population of the settlements. Consequently, both the sociological and the geographical conditions for the distribution of the culture-objects even over great distances outside the Eskimo domain were present.

<sup>1</sup> Cf. MAUSS & BEUCHAT, p. 50.

There is nothing which militates against the view that individuals who have known and used the objects in question from the coast of Alaska have themselves come to Greenland and there introduced their use. It is also possible that the distribution has taken place somewhat differently, that, for instance, attempts have been made from time to time throughout the whole region to build umiaks. Even the Polar Eskimo, according to KNUD RASMUSSEN, have traditions which state that umiaks were once used within their territory. Lastly, it is possible and — as I shall try to show below — most probable that from the regions about Bering Strait a regular stream of people has passed through the Eskimo districts from west to east. In the regions about Bering Strait a mixed Eskimo-Pacific-Asiatic population has arisen — mixed both as regards culture and race — and this mixed population has spread out towards north-west and east, following the Eskimo roads of communication, and carrying along with it the knowledge of the umiak, the net made of whalebone, etc.

### Eskimo Summer and Winter Culture.

It has already been pointed out in a previous chapter that, although the Eskimo are a primitive people, they are in possession of an unusually large number of implements, of which many are complex and, to speak technically, highly developed.

Their economic culture displays a similar variety. Not in the sense that there is a division of labour within the community as regards the various means of obtaining a livelihood, but because all the bread-winners of the tribe are obliged to carry on different occupations at the different seasons of the year.

We may safely say that among no other people is the annual economic cycle so distinct as among the Eskimo. The difference between summer and winter is especially marked, so that we can distinguish between an Eskimo Summer Culture and Winter Culture, which differ so highly that they are characterised not only by different methods of occupation, but in a great measure even by different sets of implements.<sup>1</sup>

This statement applies especially to the Arctic Eskimo, whose winter occupation consists in the various methods of hunting on ice, while their summer occupation is inland fishing and hunting. The Subarctic

<sup>1</sup> I pointed out the existence of this seasonal dimorphism, or difference between a summer and a winter culture, even in my preliminary paper on the subject (1905). MAUSS & BEUCHAT, in their interesting paper, have carried out my observations still further and tried to demonstrate a summer and a winter side also in the social morphology of the Eskimo. How far they have succeeded in this is a matter into which I shall not enter at present.

Eskimo, in the majority of cases, also practise inland fishing and hunting during the summer, or to put it more exactly, during a part of the summer, while during the rest of the year, the winter included, they hunt in kayaks on the open sea. Some Subarctic groups even pursue kayak hunting all the year round on the open sea, and special summer hunting in the interior has fallen into disuse; but it is evident that this is only of exceptional occurrence and due to the fact that access to the inland is barred in one way or another, either, for instance, by hostile tribes (South Alaska), or by peculiar natural conditions (Greenland). Consequently, the apparently simplest instance of the Eskimo annual rotation of occupations — viz., kayak hunting all the year round — is in reality a matter of simplification and not of primitiveness.

The difference between the summer and the winter culture is best shown in tabular form, but it should be borne in mind that only the most typical and important conditions have been considered. The following is the typical table for the Arctic Eskimo culture.

	Place of abode	Occupation	Principal Implements	Dwelling
Winter .....	In the beginning of the winter: The coast land. Later in the winter: The sea ice.	Hunting on the sea ice.	Dog sledge; harpoon.	In the beginning of the winter: Earth house. Later in the winter: Snow house.
Summer .....	Inland.	Hunting on land and fishing in rivers.	Kayak; lance; bow and arrow; salmon spear.	Tent.

Originally, all the Arctic Eskimo doubtless lived during the first part of the winter in an earth house. The situation of this was not strictly connected with the coast, as such; but its situation was dependent on two main considerations. Firstly, whether the stores from the summer fishing and the autumn hunting of reindeer could be turned to account at the place in question, and secondly, whether there was comparatively easy access to the sea ice. Now, however, a great many of the Arctic Eskimo in the Archipelago appear to have discarded the earth house and to have moved direct from the tent to the snow house which is now also used during the first part of the winter, while they live on what they have stored away during the summer and autumn. It is a period of the year which often has the character of being a festive season, if the supplies are ample, and a comparatively large number of people are gathered together. Later, when hunting on the sea ice begins, the people disperse, and live scattered over the ice.

As regards the above table for the Arctic Eskimo, those especially

referred to are the inhabitants of the Archipelago (the Eskimo near Coronation Gulf, the Netchillik district, etc.), where the Arctic culture is most distinct. Here the winter lasts nine months of the year, and the summer only about three. From an anthropogeographical point of view the winter ends when the winter ice breaks up on the sea and there is open water, and the summer ends when the fresh water is frozen over and the reindeer herds leave the tundra.

When one gets away from the Archipelago, along the coasts of Alaska, Greenland or Baffinland and Labrador, the difference in the seasons alters, the winter gradually becoming shorter and the summer longer; that is to say, the sea is covered with ice during a shorter period. At the same time the ice is less extensive. Open sea prevails during a greater and still greater part of the year.

The winter place of abode varies in a corresponding manner. The sojourn on the sea ice is shortened. The change takes place especially from the fact that it gradually happens that it is not the entire population which moves out on the ice, but the hunters only, while the families live in the settlements, which, on account of the access to the ice, are situated on the coast, and especially on the headlands. The dwellings consist of permanent winter houses. Snow houses gradually fall into disuse.

When one gets still further away from the Archipelago, along the coasts mentioned above, one comes to regions where the sea ice no longer plays any part as regards hunting. One then comes to the Subarctic Eskimo, whose place of abode throughout the winter is the coast. There the conditions as regards access to the open sea and the possibility of landing in skin boats determine the site of the settlement. Kayak hunting becomes by far the most important occupation throughout the winter. During a part of the summer kayak hunting may also take place, or there may be periods of whale hunting. But the rule is, that these Subarctic Eskimo, like the Arctic, during the summer make journeys into the interior for the purpose of fishing in the rivers (especially for salmon) and of hunting reindeer.

Consequently, the Subarctic Eskimo have the same summer culture as have the Arctic Eskimo, even if it plays a somewhat different rôle among the different groups. As mentioned above, in some groups inland hunting is entirely abandoned.

The following is the table for the Subarctic Eskimo:

	Place of abode	Occupation	Principal Implements	Dwelling
Winter .....	{ The coast.	Hunting in kayaks.	Kayak; har- poon; (umiak).	Earth house.
Summer .....	{ Inland (other- wise the coast).	Inland hunt- ing; Fishing in rivers.	Kayak; lance; Salmon spear; bow and arrow.	Tent.

To this might be added a table showing the conditions among the most extreme Subarctic Eskimo, with whom the summer inland-occupations have ceased entirely. The difference between winter and summer is, then, not so great that we are justified in speaking of a different summer and winter culture. We can only speak of seasonal differences of minor importance.

### Is the Arctic or the Subarctic form of Culture the older.

In discussing the Eskimo culture we have classified it according to geographic situation. The question now is whether this classification corresponds with the sequence of development. And next, whether the direction of this development has been from Subarctic to Arctic or the reverse.

As has been shown already the historical sequence of discovery led to the Subarctic culture being regarded as the true and original form. In reality, the problem has never before been set, as it has been here, by distinguishing between Subarctic and Arctic,<sup>1</sup> nor, therefore, has the question regarding the relative antiquity of these two forms been discussed.

H. RINK did not in reality get beyond dealing with the Subarctic form, and for this reason, amongst others, he referred the origin of the Eskimo culture to Alaska. This, however, cannot be reconciled with BOAS's previously mentioned demonstration of the fact that traditions point towards the central regions, where the economic culture is decidedly Arctic. Neither does the theory that the Subarctic culture originated in Alaska agree with the above-mentioned results of the JESUP Expedition.

Consequently, at the very outset we find conditions which favour the belief that the Arctic form of culture must be the older, but we shall now see to what results an investigation on anthropogeographical lines will lead us.

### The Typical Arctic Winter Occupations.

**Methods of hunting on Ice.** The real Arctic elements in the winter culture are represented by the methods of hunting on ice, and of these the Maupok method is really the essential method of hunting during the winter, while the Utok method is characteristic of the late spring months, and finally, the annual period of hunting on ice ends late in the spring or early in the summer with hunting at the cracks in the ice or at the open holes. The chief weapon is the harpoon. This weapon is not especially Eskimo in its origin; it is widely distributed, and occurs both in North America and in North Asia outside the Eskimo

<sup>1</sup> Except in my paper of 1905.

circle. Those used in Utok and Maupok hunting are as a rule thrusting harpoons and fairly simple in form. But in the hunting at the cracks in the ice harpoons must be used which can be thrown. The relationship between the three main methods is as follows: in the central, most Arctic regions, as for instance in the Netchillik and Coronation Gulf districts, the Maupok method is the most important, and it is pursued during the greater part of the sojourn on the sea ice. The Utok method is the next in importance.

But the further one gets away from these regions westwards or eastwards the more the conditions are altered, in so far as there is less and still less occasion for the employment of the Maupok method, while the Utok method and still more the hunting at the cracks in the ice still play an important rôle for a time. Thus, the Utok hunting and the hunting at the cracks in the ice are of importance in Norton Sound, while the Maupok method is only occasionally employed; it has ceased to be of importance even north of Bering Strait. In West Greenland there is also occasion to observe that the Utok hunting and, especially, the hunting at the cracks in the ice play a great rôle even after the Maupok method has ceased to exist as a regular method of procuring a livelihood. In West Greenland the border-land as regards the importance of the Maupok hunting as a means of procuring a livelihood was undoubtedly in old days Umanak Bay and the districts at the head of Disco Bay.

With regard to the hunting at the cracks in the ice — which can, however, scarcely be designated a fixed method of hunting as are the Maupok and the Utok methods, among other reasons, because the Maupok and the Utok methods are only used in hunting seals, while by the more vernal hunting at the cracks in the ice not only the common seals are caught, but also walruses and various species of whales (White Whales and Narwhals) — it should further be stated that the hunting has begun to take the kayak into its service. While with the Maupok and Utok methods the dog sledge only has been used, in the hunting at the ice-cracks the kayak also begins to be employed, both to ferry the hunter across the wide cracks in the ice and to fetch home the booty harpooned at the ice-edge. Thus the hunting at the cracks in the ice forms a transition from hunting on the ice to kayak hunting on the open sea.

Besides the three main methods of hunting on ice mentioned here, it should be remembered that there are other methods, such as the hunting on smooth ice, and especially the *ituarpok* method mentioned under Greenland, which is probably of very ancient date, and of interest as regards the history of the origin of the ice-hunting methods.

The hunting of the musk ox is partly a summer and partly a winter occupation, but plays only a slight and local rôle on account of the musk-ox having been decimated. The winter musk-ox hunting was

undoubtedly of importance originally, but must now be regarded as the relic of an occupation which is of importance only for the small inland tribes on the Barren Grounds, and occasionally for a few other groups. I do not think that musk-ox hunting is now included as a regular factor in the annual economic cycle of any other group than, perhaps, the inhabitants of the Barren Grounds. February and March appear to be the best time for the winter musk-ox hunting<sup>1</sup>. The hunter's equipment consists of the lance, snow shoes, and the dog sledge; and, moreover, the dogs themselves to overtake and stop the animals.

### The Typical Arctic Summer-occupations.

**Reindeer hunting** is a summer occupation, and an important link in the annual economic cycle of the Arctic groups. That it becomes of less importance among the Subarctic groups is due in Greenland, as already mentioned, to geographical conditions, while in south-western Alaska the case evidently is that the Eskimo have wedged themselves along the coasts into regions where the inland was occupied by Indians. Reindeer hunting is pursued, partly as a more individual hunting with bow and arrow, and partly by the co-operation of several hunters. The chief methods are the hunting at the fords and the hunting within fences, which fences usually go down to a lake; in both cases the kayak (and the lance) is an indispensable expedient. Both the latter modes of hunting occur everywhere where reindeer hunting is of any importance; they are known from Greenland to Western Alaska.

**Salmon fishing** is a summer occupation which occurs everywhere where the Eskimo have not passed into a purely coastal life. The chief implement is the salmon spear, which is not specially an Eskimo implement; it is used in slightly differing forms among other tribes in North America and in North Asia. Moreover, a small bag-shaped net or a hand-net on a stick is employed; dams are also commonly constructed.

**The Hunting Implements**, which are considered here only because of the rôle they play as regards the "methods of hunting," are only mentioned, in the review of the summer and the winter occupations, in connection with the hunting methods in which they are employed.

### Means of Conveyance and Appurtenances.

There is scarcely any feature which so distinctly shows that the Eskimo rank as a hunting people of high development as the fact that they use such highly developed means of conveyance at their huntings.

**The Dog Sledge** is a decidedly Arctic winter contrivance. Its area of distribution extends from Holsteinsborg in Greenland to the mouth of the Kuskoquim River in Alaska. But it is only from Melville Bay

<sup>1</sup> STEFANSSON, I, pp. 506—507.

and from Baffin Land to Kotzebue Sound that it is the most important and, in the Central Archipelago, the only means of conveyance on the sea, where it is used on the smooth winter ice.

The Kayak in its simplest form is a decidedly Arctic summer-contrivance, which, in reality, is distinguished from its mother form, the birch-bark canoe, — which is frequently partly decked over — only by its covering of skin. This simplest form of kayak (cf. M. o. G., Vol. 34, figs. 36—38) has an oblong and not a circular man-hole; it is, however, small and light, so that it may be carried across land, and can be used as a ferry, if two are lashed together side by side. Among the Central Arctic Eskimo it is chiefly used at the reindeer hunting in lakes and at the fords.

As this Arctic river-kayak, away towards the Subarctic regions, gradually develops more and more into a decidedly marine appliance, it is perfected both as regards arrangement and structure. The man-hole is made circular, so that it fits round the hunter's person, and can be made to fit still better by means of the waterproof jacket. Besides the lance, which was the chief weapon of the river-kayak, the sea-kayak is furnished with throwing harpoons with throwing boards.

The throwing board in all probability, for ethnographical reasons, must be regarded as being of American origin. As regards the throwing harpoon, I believe that the highly developed forms with long line and the large bladder are of comparatively late origin. It seems most likely that the throwing harpoons first used by the Eskimo were closely related to the thrusting harpoons, and have had no other floats but the harpoon shaft; at Point Barrow and other places such throwing harpoons without bladder still play a rôle. I think it is doubtful whether the so-called "bladder-dart" is a transitional form as RINK supposed. I am more inclined to believe that the large bladder was borrowed by the Eskimo from the Pacific Asiatics; according to this, then, the bladder was first used with whale hunting, and the Eskimo were the first to convert it into a contrivance for use when hunting seal from a kayak.

I think that the double paddle must be of similar origin. With the exception of the Eskimo, the American tribes do not appear to have used the double-bladed paddle, but only the single-bladed one. On the other hand, the double paddle was an implement rather commonly used in Northern Asia<sup>1</sup>, indeed, its use extended right across to Europe, where double paddles are known, for instance, from bog-finds. Therefore I believe that the Eskimo in the regions about Bering Strait have replaced their original one-bladed paddle by the Asiatic double paddle.

The hunting kayak — equipped with the view of enabling a livelihood to be gained — as developed from the simple river-kayak, oc-

<sup>1</sup> Cf., among others, MIDDENDORFF, Vol. IV, p. 1356.

curs, then, as a product of accretion, the individual parts of which are partly of Eskimo and American (lance, throwing harpoon, and throwing board; the bird dart must also be included among these), partly of Asiatic origin (the hunting bladder probably and the double paddle).

The Umiak and my theory which regards it as borrowed originally from the Pacific-Asiatics have already been mentioned. As an argument in favour of its southern origin and its distribution from the western Eskimo regions to the eastern, the sails may be mentioned. From the oldest times of "discoveries" sails have been recorded not only from the districts around Bering Strait, but also from Davis Strait, where even Frobisher saw umiaks with sails.

### Eskimo Dwellings and Garments.

The dwellings also bear witness to the fact that the Eskimo possess a rich culture. Several of the neighbouring tribes living immediately south of the Eskimo, such as the Nenenot Indians in Labrador, the Tineh tribes west of Hudson Bay, and the Kutchin tribes in the interior of Alaska have the same type of dwellings both for summer and winter use.

With other North American and North Asiatic peoples, on the other hand, the summer and winter houses differ both in type and in construction. But the Arctic Eskimo have, besides the summer house, two quite different kinds of winter house, both equally useful; viz., the snow house, and the house built of stones, earth, and wood or whales' bones. This is a case parallel to that of the kayak and the umiak.

From a purely anthropogeographical point of view, the earth house among the Arctic Eskimo tends to become the house into which the Eskimo move in the autumn, and in which they live as long as the stores from the autumn hunting last. These earth houses are situated at stated places, usually near the coast, and often on promontories or high points. As a rule new houses are no longer built, the existing ones being used after the necessary repairs have been effected and the roofs renewed. By way of distinguishing it from the earth house the snow house may be defined as the hunting lodge of the winter and spring, without which the wandering life on the sea ice would not be possible.

In the meantime it is difficult to believe that this distinction in the use of the houses is a satisfactory argument for the necessity of two different kinds of winter house coming into existence — or groups of winter houses, as in reality the winter house of earth, stone and wood or bones falls into several types, as will be mentioned later on. It is also seen that the snow house is not used by the Subarctic Eskimo, while, with the most decidedly Arctic Eskimo in the inner parts of the Archipelago, the snow house is now usually the predominant one, and the old ruins of permanent houses are left unused.

In other places, for instance at the mouth of the Mackenzie, at Point Barrow, and at Smith Sound snow houses as well as more solid winter houses are used. The latter, in these three places, are, moreover, seen to represent three different types, which differ from the snow house not only as regards material but also in their structural features, so that it is evident that each of them has a history of development other than that of the snow house.

While the snow houses are everywhere of the same prevailing type, the winter houses in the three places mentioned above, and in some other districts, exhibit such great mutual differences that these cannot be accounted to be simple local variations. In some cases we are obliged to assume outside influences as regards the types of the winter houses. These interesting conditions, which cannot be treated anthropogeographically, will be discussed later on in a supplementary ethnographical chapter (See pp. 187 sqq.).

The snow house, on the other hand, must necessarily be regarded as an original Eskimo creation. With no other people do we find anything corresponding to it. But then, it must be remembered, no other region provides so decidedly, as does the region of the Central Archipelago, the geographical conditions for the origin of the snow house, such as the presence of the necessary snow and the absence of other kinds of building materials (especially wood). Immediately the Mackenzie river and Point Barrow are reached, where wood is present in sufficient quantities, other and more spacious and warmer houses occur, and the snow house becomes of less importance.

The geographical distribution of the snow house is from Kotzebue Sound in the west to Melville Bay and Northern Labrador in the east. It plays its greatest rôle in the Archipelago or in the regions where the hunting on the sea ice is of the greatest importance. As the hunting on the ice decreases in importance on getting away from the Archipelago the snow house also disappears.

Consequently, if the snow house is of Eskimo origin, and some, at any rate, of the other winter house types are of foreign origin, yet all the winter-house types have adopted three contrivances which, it is true, may not be regarded as being of Eskimo origin, but as they are necessarily employed in every primitive Arctic house, must therefore be assumed to have been used in the oldest Eskimo houses. These inventions are the passage which by its length and arrangement replaces a tightly shutting house door, the blubber lamp which replaces a fire, and the platform which also plays an important part in connection with the heating of the house<sup>1</sup>.

The Skin Tent is the summer dwelling from Greenland and Labrador

<sup>1</sup> Regarding these technical items the reader is referred to M. o. G., Vol. 34, pp. 811 sqq.

to Alaska. It occurs in somewhat different forms, which, however, may probably be regarded as local variations of one and the same primitive form (cf. pp. 187 sqq.).

The Eskimo Skin-garment shows from west to east a certain uniformity. Differences and local peculiarities occur, however. We have the most motley picture from south-western Alaska of the forms of the garments, which, in agreement with RINK, I was inclined to attribute to outside influences — Indian influence, according to RINK's opinion, or influence of Asiatic origin, perhaps of the Pacific-Asiatics. Considered anthropogeographically, this latter assumption appears still to me more probable, but from an ethnographical point of view the opinion has lately been expressed that these diverging forms of garments from south-western Alaska must be very ancient local forms<sup>1</sup>.

A comparative description of the Eskimo skin-garments has recently been given by GUDMUND HATT in his book cited above, in which the Arctic skin-garments both in America and in Eurasia for the first time are made the subject of a fundamental treatment. With regard to the Eskimo, HATT arrives at the conclusion that their garments belong to the oldest complex of forms of skin garments which are known from the Arctic region, and that certain secondary west and east Eskimo peculiarities meet in the central regions, from which he infers that the Eskimo forms have originated from the regions west and north-west of Hudson Bay.

### Conclusions regarding the Arctic and Subarctic forms of Culture.

According to the above survey we can divide the Eskimo methods of hunting and the implements they use in connection with their economic life into three main groups.

**First Group.** In this are included such methods and implements as are distributed both among the Arctic and Subarctic Eskimo; for instance, the various methods of reindeer hunting (where there is opportunity for it), the salmon spear, tent, bow and arrow, etc. In other words, they are partly the summer implements of the inland, and partly implements such as the bow and arrow, which are not specially Eskimoic as regards their uses (quite another thing is that the Eskimo in their compound bow have created a variation of the "composite bow.")

**Second Group.** This consists of such methods and implements as occur among the Subarctic Eskimo towards the west and the east, but the distribution of which is interrupted in the central regions. Here may be mentioned, for instance, kayak hunting on the open sea and the highly developed hunting kayak,<sup>‡</sup> the umiak, bird-dart, etc.

<sup>1</sup> GUDMUND HATT, p. 108.

**Third Group.** In this are comprised all the things which have a central distribution and disappear gradually as we get away from the central Archipelago. These are especially the typical features of the winter culture or the methods of hunting on ice, the dog sledge, the snow house, etc.

The conditions pertaining to the distribution of the last two groups indicate a central origin. One may even be tempted to consider that the central or third group is the youngest one, which has supplanted the eastern and western forms and forced them asunder outwards.

However, for several reasons which will be apparent from the preceding anthropogeographical investigations this cannot be the case; the central Arctic group must represent the oldest Eskimo culture, as will also be seen from the following arguments:

- 1) The reason why the so-called second group or certain Subarctic implements and methods do not occur in the central regions is due to purely geographical causes, as shown above.
- 2) Moreover, it has been shown that the most typical Subarctic forms are easily explained either as borrowed later from outside sources (for example the umiak) or — like the hunting kayak — as special products of Arctic Eskimo implements developed by adaptation to Subarctic surroundings, and, probably, incited by adoption of elements from outside.
- 3) Among the Central Arctic Eskimo, on the other hand, one meets with all the methods and implements which are peculiar to Eskimo culture (i. e. those not found in other cultures), and they are met with in their most primitive form and usage, while among the western and eastern Subarctic Eskimo they either do not occur (methods of hunting on the ice, the snow house, etc.) or else they have been developed to a special degree (the finest instance of which again is the development of the hunting kayak from the river kayak).
- 4) A further argument for the transition from Arctic to Subarctic Eskimo culture is that such a transition must as a matter of fact have taken place from the Arctic Archipelago and Arctic Northern Greenland to Southern Subarctic Greenland and from the Arctic Archipelago to Labrador. Consequently, as the transition from Arctic to Subarctic culture can take place, and has taken place, in an easterly direction, our supposition that it has also happened along the western line of distribution of the Eskimo culture from the Archipelago to Alaska is strengthened.

Consequently, from the above arguments, we are compelled to assume that the Eskimo culture is oldest in its Arctic form.

The Subarctic Eskimo culture, on the other hand, must be regarded as a form derived from the Arctic Eskimo culture, which has been brought about partly by new-adaptations, when the Eskimo emigrated down into

the Subarctic regions, and partly by the influence and incitation exerted by the cultures with which they there (especially in the districts around Bering Strait) came into contact.

This transition from Arctic to Subarctic Eskimo culture is, anthropogeographically, easily accounted for, while a development in the opposite direction from Subarctic to Arctic would be rather inconceivable, there being in the Subarctic culture an entire absence of any germs from which some of the chief elements in the Arctic winter-culture might be able to spring. Consequently, in the latter case there could be no other explanation than this, that they were cultural borrowings, but no other form of culture is known from which the most Arctic cultural objects and methods of hunting could be conceived to have been adopted.

This negative consideration is also an argument in favour of the Arctic form of culture being the original one.

### **The Home of the Eskimo Culture from an Anthropogeographical point of view.**

The home of Eskimo Culture is consequently synonymous with the home or point of origin of Arctic Eskimo Culture.

The point of origin must necessarily have been an area in which there were the necessary geographical conditions for the existence of the Arctic Eskimo culture. Indeed, very special conditions must have been present in this area for it to have forced the ancient Eskimo, through the demands of adaptation, to modify their original culture in an "Eskimoic" direction.

Even according to this view there can scarcely be any question of other tracts than such as are still inhabited by Eskimo. The north coast of Siberia is excluded by its geographical nature. Its decidedly flat-shore character with low-water areas of great extent, and its barrier-forming masses of pack-ice and lack of extensive fields of winter-ice over deep water behind protective groups of islands, all have prevented Eskimo culture from being able to find, on the whole, means of distribution there.

Then there is the north coast of America. But even that is too large to be taken, as a whole, for the point of origin. For instance, we must leave out the stretch of coast along Alaska's north-west and north coasts, from Kotzebue Sound towards the Mackenzie, because, for similar reasons as exist on the north coast of Asia, it is not inviting for the Eskimo, and only at places, few and far between, from Kotzebue Sound to Point Barrow are small groups of Eskimo met with, who are even mainly dependent on whale-hunting from umiaks of big whales — thus borrowing from more southerly regions in their manner of obtaining a livelihood.

We next come to the stretch of coast on both sides of the mouth and the delta of the Mackenzie. This place, where a large river abounding in fish connects the inland regions with the sea, might appear to be well suited to participate in the development of Eskimo culture. But, nevertheless, I do not think that this has been the case. Firstly, the district with its abundance of fresh water in the delta and with its abundance of drift-wood could permit of what we may term an "Indian" mode of life; it is impossible to believe that the district in question could force people having another mode of life to make radical and fundamental changes in it. Secondly, these Eskimo at the mouth of the Mackenzie did not in any great degree use the abundant drift-wood for fuel in winter, but depended upon oil lamps, which shows that their ancestors had migrated from regions where drift-wood was not abundant. It must, then, be assumed that the Mackenzie Eskimo have migrated along the coast from Coronation Gulf or adjacent parts.

Then we have left only the Barren Grounds Peninsula, between the Arctic Ocean and Hudson Bay, and the Arctic Archipelago situated in front of the Arctic Ocean. As regards the regions more easterly than Hudson Bay, these are out of the question for both geographical and ethnographical reasons.

Consequently, these considerations lead us to the region of the Arctic Archipelago, where we find the Arctic Economic Culture in its most typical form. Hence it appears that we must also assume that the Arctic Archipelago is the region where the Eskimo culture originated.

We must suppose, then, that for some reason or other the ancient Eskimo moved across the inland regions between Hudson Bay and the Lower Mackenzie River to the coast of the Arctic Ocean and the southern parts of the Archipelago, whereby Coronation Gulf and the Netchillik districts are especially meant; and that the Eskimo culture was gradually modified as an adaptation to the peculiar natural conditions existing in the Archipelago, of these natural conditions the most important features to be mentioned are the ice-covering, the aquatic mammals, the wanderings of the reindeer herds and the absence of wood. To these must necessarily be added, in connection with the times we are here considering, the musk ox; originally, it must have been of great importance.

It is these natural conditions in the Archipelago or, to put it more exactly, in the coast and sea regions between the mainland and the islands which have been able to force a slow hunting people such as the ancient Eskimo must have been to undertake so thorough a cultural change as that which the modification of the Eskimo culture must necessarily have required.

## From Continental Culture to Coast Culture.

The Eskimo are always described as a coast people, and their culture as a well-marked coast culture. This is of course true as regards the Subarctic Eskimo; but, properly speaking, it does not in reality apply to the Arctic Eskimo.

It is true that, in a strictly geographical sense, the Arctic Eskimo are inhabitants of the coast. But in reality their culture is not adapted to a coast-life in the general meaning of the term. This is at once seen by looking at the table for the Summer and Winter cultures of the decidedly Arctic Eskimo (p. 157). Normally, the summer is spent inland, and they do not move to the coast until the sea is frozen over.

The typical mode of life of the Arctic Eskimo consists, then, in moving to and fro between the interior and the sea-ice, while the coast and the open sea play so insignificant a rôle for them that they must be described as quite continental in their mode of living<sup>1</sup>.

This continentality is interestingly illustrated by the fact that the testaceous and crustaceous animals of the coast, which are otherwise so important as reserve food for inhabitants of the coast with a hunting culture, play no rôle whatever for the Arctic Eskimo. There is hardly any other explanation for this than that the latter descended, or at any rate have inherited their mode of living and way of thinking, from inhabitants of the inland who have moved direct out to the Arctic sea coast, where they have developed this mode of living with its continental characteristics. As regards the observation mentioned above, I shall cite STEFANSSON<sup>2</sup>: "No sort of shell fish ever seems to have been used as food by the Eskimo, north of the mouth of the Yukon River, at least, although clams and shrimps abound in certain places, and their use is just now being introduced by white men."

It is seen, then, that the Eskimo culture in its older, original form — viz. the Arctic form — has still preserved its continental character. The modification of the Eskimo culture into a real coast culture takes place, then, only gradually, as it gets away from the Arctic Archipelago and becomes Subarctic. 78

## A Palæeskimo and a Neoeskimo Layer of Culture.

Herewith we finish the anthropogeographical investigation, in which we have studied the economic culture of the various Eskimo groups such as it has developed in various places on the basis of the geographical adaptation.

It appears, however, that the Eskimo culture ought not to be regarded exclusively as a result of the geographical adaptation. Influence

<sup>1</sup> Cf. M. o. G., Vol. 34, p. 402.

<sup>2</sup> STEFANSSON, II, pp. 450—451.

and borrowings from without also have conduced to the forming of the Eskimo culture which we now know, or which, more correctly, defined itself when the Europeans first established a connection with the different divisions of the Eskimo. Yet the adaptation is the primary factor — the influence from without being a secondary factor in the history of the development.

We have arrived at the result that the Eskimo culture is oldest in its Arctic form, and that it has arisen in the Arctic Archipelago as a product of adaptation.

From the Archipelago the Arctic Eskimo culture spread east and west as far as the ice-conditions allowed. Towards the west it reached the districts at Bering Strait, where it came under foreign influence, especially under the so-called Pacific-Asiatic influence. By this we understand influence along the coast route from some different Asiatic Pacific peoples. The conception must be understood collectively, because there is so much that is unknown and unravelled as regards ethnology and history of these peoples; but there can hardly be any doubt that it is in this direction we must search for the most important source of the cultural influence on the Eskimo before they met the Europeans.

It so happened that the foreign influence was not so much a refashioning of the Eskimo culture which was created in the Archipelago as a contribution towards a further development in established directions. Some new implements were, of course, adopted, but that contact with a higher and richer technique has no doubt brought about improvements of existing forms is of just as much significance. Thus not only was the Arctic form of the Eskimo culture improved, but simultaneously the Eskimo culture expanded and advanced further in a southern direction, whereby the Subarctic form was first fashioned and developed.

The place for this influence, or rather for these various influences, amongst which the so-called Pacific-Asiatic is the most important, was the west coast of Alaska or the districts round Bering Strait, which we can best express by alluding to the most essentially geographic momentum *viz.*, the approximation to Asia.

With this demonstration of the Archipelago and Bering Strait being the two geographical focuses in the history of development of the Eskimo culture — the Archipelago as important for the adaptation and Bering Strait for the influence from without — the investigation at issue essentially ends. If one would make these results more intense one must do so by employment of other scientific methods, ethnographic, archaeologic, etc.

In the following, I myself shall endeavour, however, to throw a little more light on the process of development of the Eskimo culture by firstly investigating whether one can form any idea of the pre-Eskimo mother culture from which the oldest Arctic Eskimo culture

has issued; I will call this last mentioned oldest Arctic Eskimo culture the Palæeskimo culture, and the older Arctic Eskimo people Palæeskimo. A further explanation of this name as being analogous with Palæasiatic and the like is hardly necessary.

Nextly I will subject such a conspicuous object of culture as the house to an ethnographic investigation, whereby, amongst other things, there will be occasion to try and decide firstly which forms are originally Palæeskimo, brought along from the home of adaptation in the Archipelago, and secondly which have first arisen in the domain of influence — the area of acculturation — at Bering Strait. I will call all these latter forms, not only of the house but also of other cultural objects, received here or developed by incitation from foreign influence Neoeskimo, and the whole of the younger Eskimo layer which carries this hybrid culture Neoeskimo.

The transition from Palæeskimo culture to Neoeskimo culture has taken place in any particular spot at the moment when the tide of culture coming from the regions around Bering Strait in some way or other reached the place in question, having fructified and enriched the present Palæeskimo culture. The Subarctic culture, both towards west and east, entirely belongs to the Neoeskimo layer.

## The Economic Cultures Adjoining the Eskimo Culture.

Thus, the origin of the Eskimo culture is a somewhat intricate matter. In the Archipelago, by adaptation to the special conditions of nature here, the Palæeskimo culture first came into being, and then spread north, east and west in the Archipelago and along the north coast of North America. In the regions around Bering Strait and over an area which must not be considered in a too restricted sense, the Palæeskimo culture has been exposed to influence from without, and the Eskimo culture, of which the various nuances have been dealt with here, gradually emanated.

We must now propound two questions: 1) What was the character of the economic culture from which the Palæeskimo culture originated, and 2) what forms of culture in the district round Bering Strait can have influenced the Eskimo culture?

For the solution of both questions is demanded a consideration of the forms of culture contiguous to the domain of the Eskimo, or, at any rate, that which is found in the vicinity of this, and from which there is a possibility of influence.

I prefer to begin with America, because there, we have more simple and comparatively less compounded conditions than in Asia. We need pay little regard to the civilizations, based on plant-cultivation, which we find in the south-eastern and southern parts of North America, even if an indirect influence and an interchange of culture is not quite out of the question. We must go north of the Canadian lakes before we find those forms of culture which can be considered to represent conditions similar to those with the mother-culture of the Palæeskimo. In these northern districts we can, then, pick out three forms of economic culture, which I will call 1) the Forest Indian form, 2) the Prairie Indian form, and 3) the North-west Indian form.

The three forms, which are associated with the three pronounced geographical types of landscape, the forest, the prairie, and the west coast so abounding in inlets, comprise, as it were, three belts from south to north. In its distinctive form the prairie extends no further than the region of the Saskatchewan River, but smaller parts of prairie occur

amidst forest regions as far as 60° N. lat. Around Peace River, even larger regions of prairie are found, and the bison, the most important form of animal life on the prairie and the Prairie Indian's most important game, only reached its northern boundary at, or a little north of, the Great Slave Lake<sup>1</sup>.

The North-west Indian culture is by considerable distance and by the huge range of the Cordilleras separated from the interior districts where we must assume that the pre-Eskimo mother-culture must have had its home. Next, the North-west Indian culture is so peculiarly developed and, no doubt, so influenced from Asia at a comparatively recent date, that for these reasons we cannot expect that a study of this culture will give us the basis of the Palæeskimo culture. At a later stage the North-west Indians may have influenced the Eskimo in Alaska, but this influence has hardly been of encroaching significance in any direction.

If we will seek to understand the basis of the Palæeskimo culture we must investigate the economic culture of the Northern Prairie and Forest individuals. But before that, we must look at the forms and groups of economic culture which in Asia may be assumed to have influenced the Eskimo culture in its later Neoeskimo stage. When, for the sake of a general view, we number the mentioned American forms of culture from 1—3, and continue in Asia, we get the following:

4) The Siberian Reindeer Nomadism, which is a form of culture of a distinctly continental character which only relatively late penetrated to Bering Strait; its influence on the Eskimo culture has no doubt been very slight.

5) The Siberian Continental Hunting Culture. The reindeer nomadism, however, forms only a comparatively thin layer over another and older form of culture, which in reality still exists, supported partly by certain tribes and partly by the real nomads, who, besides their reindeer-breeding, carry on hunting and fishing in the old way. This hunting culture, which is associated with the forests and rivers in Siberia, corresponds, however, rather exactly with the above-mentioned culture of the northern Forest Indians. A more exact demonstration of this would, however, in this connection, lead too far, but most of the under-mentioned hunting and fishing methods from the regions west of Hudson Bay are refound in Siberia. The same holds good of the hunting implements, and vehicular contrivances such as snow shoes and birch-bark canoes; indeed, a sledge of the Canadian toboggan type seems even in the time of MARCO POLO<sup>2</sup> to have been in use in North-eastern Siberia.

There is hardly any doubt that these and other congruities represent a reminiscence of the ancient distribution of culture, and perhaps simul-

<sup>1</sup> Cf. HORNADAY.

<sup>2</sup> Cf. MARCO POLO's third book, chapter 44.

taneously the distribution of people from Asia to North America. And this is the Palæasiatic-American connection which JOCHELSON speaks about when taking in consideration the distribution of the forms of the houses.

In Asia, however, the original conditions have been greatly changed by the waves of people and the streams of culture which have poured northwards; but even with these alterations the inland culture of the Asiatic continent has had no particular significance for the Eskimo culture at any of its stages.

6) The Pacific-Asiatic Influence. On the coast of the Pacific the Palæasiatics have been able to hold out. Here the nomads have not been able to expel or denationalize them. On the other hand their culture has been subjected to such a strong, direct influence from the south, especially from Japan, that the original conditions are greatly altered. When reading STELLER's description of the old Kamchadales, for example, one gets a strong impression of their influence from the south. There is no doubt that they have been closely in touch with Japanese navigation, even if this, in the time of BERING and STELLER, was no longer the case, and was only traced through tradition and the possession of culture, inasmuch as BERING and STELLER arrived at these shores about one hundred years after Japanese navigation had been suppressed by the Shogunate.

As emphasized before, the Pacific Asiatics have, from a purely geographical point of view, therefore, the common characteristic that they live along the Pacific Coast, but they do not constitute any source for a homogeneous influence on the Eskimo culture. We must rather comprehend the conditions as expressing a route, in that the Pacific Asiatics have been nearer to elements of culture of different origin and, on account of navigation, the communication between south and north has been considerably shorter and easier along the Pacific Coast than through the interior of Siberia.

In reality the Pacific Asiatics must have been in a position to carry elements of culture having very diverse origin. The unravelling of this would demand thorough ethnographical studies, for which we scarcely possess the material at present.

We must therefore be content with a purely temporary analysis of those different elements of culture which the Eskimo in the regions around Bering Strait may have received along this Pacific Asiatic way of influence. They fall principally within 3 groups, which will here be made the subject of a temporary classification.

- a. Elements of culture which may be described Palæasiatic in their origin.
- b. Elements of culture from more southern cultures which have been adopted by the Palæasiatics, or by some of these, and through them transmitted as far north as the Eskimo. Within this group

there may be a question of various continental Asiatic elements: Korean, Japanese, indeed even Malayan, and, possibly, still other elements.

- c. Direct influence from East Asiatic, not Palaeasiatic, navigators who have reached as far as the Eskimo, along the Pacific Coast. In this connection special attention must be paid to the Japanese, and to the period when they were great navigators, before the beginning of the 17th century.

There might be a question of yet a 7th source for the influence on the Eskimo, viz., the old Norse population in the eastern and western districts of South-west Greenland. There has been an inclination to point to Norse influence, for instance, in the structure of the Eskimo house in South Greenland and in the Eskimo employment of iron etc.; but such influence has not been conclusively proved, and whatever the circumstances may be, a Scandinavian influence in South Greenland can never have had, however, any decisive influence whatever on the fundamental shaping of the Eskimo culture.

In the following lines we shall further consider the economic culture of the Prairie Indians, and still more so, of the northern Forest Indians, 'inasmuch as, as has been suggested, it is amongst these two groups in particular that one may expect to find represented those conditions of culture which have formed the basis for the Eskimo culture.

**The Economic Culture of the Prairie Indians.** The economic culture which has developed on the prairie cannot entirely represent the direct mother-culture of the Palaeeskimo culture. But a consideration of it will tend, however, to throw light upon pre-Eskimo conditions. This is especially true because the prairie and tundra, regarded anthropogeographically, present very similar conditions. The Eskimo must have passed the tundra, and have essentially lived there before they came to the shores of the Arctic. The chief means of subsistence with the prairie tribes was bison hunting, but on the tundra the bison herds were replaced by the musk ox and enormous herds of reindeer.

It is true that the climate of the tundra is considerably colder than that of the prairie, which accounts, also, for the difference in the vegetation; but the northern parts of the prairie still have a very cold winter together with a comparatively warm, but short, summer. On the prairie, therefore, we also find a cultural dimorphism corresponding with this. This first shows itself in the conditions of their dwellings. The typical summer dwelling of the prairie tribes is the conical skin-tent of the "Tipi" form. It evidently originates from the dome-tent, but it is a form<sup>1</sup> which came into use even before the time of the Europeans, even if, with the introduction of the horse, it seems to have been more generally distributed. As a winter dwelling, either this form of tent or

<sup>1</sup> SARFERT, pp. 22 sqq.

a round earth house was used, which is known especially from tribes belonging to the Sioux Indians, who lived round the Missouri River. It is especially known from the Mandans through the descriptions<sup>1</sup> of CATLIN and the PRINCE OF WIED<sup>2</sup>. The house had a frame of wood and an outer covering of turf.

As regards the economic culture we naturally do not consider recent times — since the introduction of the horse — and special regard is paid to the most northern regions. Here the distinction between the occupations of the summer and the winter are most pronounced. If, when speaking about hunting and fishing as two different means of livelihood, hunting was by far the most important on the prairie on account of the bison and on account of the comparative scarcity of water on the prairie, fishing was more to the fore in the forest.

In the winter the bison was hunted on snow shoes, with lances or with a bow and arrows, and even the toboggan was used with this hunting. When, in the winter, the snow had covered the prairie with a firm layer, the Prairie Indian on his light snow sledge, which was put-to with 3 dogs, could drive straight into the herd of bison and slay the beasts with his arrow. In the summer different kinds of underhand hunting were employed, when the hunter tried to steal upon the animals; but the method of hunting which gave the best return, however, consisted in driving the herds of bison in between two convergent rows of poles, which ended in a narrow fence, where the animals could be slain fairly easily<sup>3</sup>; thus it is the same method which we know from the Eskimo reindeer hunting.

**The Economic Culture of the Northern Forest Indians.** By the Northern Forest Indians I understand the original inhabitants of the areas most essentially covered with forest, which in North America lay north of the St. Lawrence and the Canadian lakes, or more correctly, north of the old frontier for maize cultivation.

Towards the south-west and west this northern forest area was bounded by the prairie and the Cordilleras, which occupy the whole of West Canada and South Alaska. Towards the north the forest area is bounded by the limit of the forest, which on the west coast of Hudson Bay is at about 60° N. lat., and then runs east of Great Slave Lake to Great Bear Lake. Finally a belt of forest goes along the Mackenzie River northwards to the delta of the river, and a similar belt of forest runs along the Yukon River as far as the delta of this river.

Apart from Labrador one can divide this area of forest into a larger Hudson part, which comprises the area from Hudson Bay to Mackenzie

<sup>1</sup> As regards my former, but now abandoned, supposition that this house was a direct precursor of the Mackenzie house, I refer to my preliminary paper on the subject and to the following section about types of Eskimo houses.

<sup>2</sup> WIED, pp. 285—86.

<sup>3</sup> UMPREVILLE, pp. 114 sqq.

River, and a smaller Alaskan part which comprises the considerably more restricted forest districts in the valley and side valleys of the Yukon River.

The forest vegetation is the only hitherto mentioned geographically characteristic feature. Meanwhile there are others of great anthropogeographical importance. Firstly the great abundance of fresh water. This especially applies to the Hudson part, the old granite and gneiss surface of which has been formed by glaciers and presents itself as "the land of a thousand lakes," a character presented also by Finland. Lastly it must be remembered that the forest is of northern pine and birch, and that it does not everywhere occur in overpowering luxuriance. It has already been mentioned that there is one area which, with alternate stretches of forest and prairie, forms the transition from prairie to forest. In a corresponding manner the boundary of the tundra is naturally not sharp, as the outer belts of forest are already, from time to time, interrupted by tracts showing the tundra character. As regards climate these regions are characterized by their distinctively continental climate, with a long and severe winter and a short and comparatively warm summer. Almost the entire region lies north of the January isotherm, — 20 C., which runs from Hamilton Inlet on the coast of Labrador in a curve almost mid-way between Hudson Bay and the Canadian Lakes, southwest round Lake Winnipeg, west of the Upper Mackenzie and south of the Yukon River. On comparing this with the fact that the same isotherm in Greenland reaches to about Disco Island, one understands that the here mentioned regions are during the winter just as cold as several Eskimo districts, and have almost as long a winter.

A circumstance connected with this, which is of the greatest anthropogeographical importance to the inhabitants, is the protracted covering of lakes and rivers with ice. If regarded from the point of intercourse the use of the sledge (toboggan) is contingent upon this covering of ice together with the covering of snow. In the economic culture, the rôle played by the covering of ice is that, through this, some fishing methods through holes in the ice occur.

The stock of fish in rivers and lakes is very abundant. All judges of the land agree in emphasizing this. The most important fish is the "white-fish" (a species of salmon, *Coregonus albus*), which, on account of its abundance and importance to the Algonquin Indians southwest of Hudson Bay, has even got the surname "the reindeer of the waters." In addition, sturgeon and pike are mentioned, as also *Salmo Mackenzii*<sup>1</sup>, which is only found in the affluxes to the Arctic Sea from the Mackenzie River and eastwards; the Tinneh tribes call it *Si*, which is said to mean "the unknown," which reappears in the French Canadian term for it, *L'inconnu*.

Nowadays the most important hunting animals are the stags. The

<sup>1</sup> Cf. SABINE.

two most important kinds of stag in these regions are the elk and the reindeer. The American elk (moose; the French Canadian *orignal*) lives in quite a similar manner as the European elk, in that it keeps to the forest districts rich in lakes and rivers, and avoids prairies as well as tundra areas. The reindeer is also found in the forest districts, where it roams singly or in small herds. These forest reindeer are, however, of slight importance as compared with the huge masses of the tundra reindeer, which in the summer overrun the tundra, while in the winter they migrate southwards to the forest-edge, or to protected places within the tundra. Also small game, such as hares and web-footed birds are of anthropogeographical importance. If we go back in years, we are obliged to assume that the bison south of Great Bear Lake and the musk ox as far as the edge of the tundra must once have played a rôle as hunting animals to the Forest Indians also.

The population in the mentioned forest belt is, in an ethnographic respect, not very heterogeneous, inasmuch as here only two groups of tribes are found, the Algonquins and the Tinneh people. Algonquin tribes occupy the interior of Labrador, and also the regions south and south-west of Hudson Bay as far as Churchill River. Further north, Tinneh tribes (Athabascans) are predominant both in the Hudson and the Alaskan parts of the forest territory.

It is not necessary, here, in this connection, to enter further into detail about the individual small groups or tribes, although an attempt to apportion the tribes to the geographical differentiation of the country would not be without interest. Meanwhile it must be emphasized, that these so-called Forest Indians also extend somewhat on the tundra. This applies to the whole stretch from Hudson Bay to Western Alaska. On the north-eastern Barren Grounds the boundary of the Eskimo's hunting fields runs south of Dubaunt Lake, and slightly north of Aylmer Lake.

In my work of 1905 I made an attempt to localize the groups in relation to hunting districts and groups of lakes, and on the whole I there gave a more copious description of the anthropogeography of these regions in question. Finally, I there quoted a series of arguments which showed that the Tinneh people could not originally have populated the Hudson lowland, but must have come from the west across the mountains. Probably those authors are right who assume that their source of origin lies in British Columbia, and that along the vast valleys of Fraser River and Columbia River they have made their way towards the east. As far as I know SCHOOLCRAFT<sup>1</sup> was the first exponent of this conception. Whatsoever the conditions of the source of origin may prove to be, it is a fact that the Tinneh people have expanded in a more restricted territory. They now inhabit such large areas that it is impossible that they always can have possessed these.

<sup>1</sup> SCHOOLCRAFT, Vol. II, p. 27.

What, here, we have to investigate is, however, the economic culture in the forest regions, and especially so in the Hudson territory. It will not be possible to give a description of the annual economic cycle, partly on account of the lack of information, and partly because to do so one must distinguish between tribes which, for preference, live at the good fishing places, and tribes which, for preference, hunt on the tundra and at the edges of the forest regions, and tribes which live in districts in which all big game has been hunted out, for which reason they must maintain life by catching small game (hares). Yet fishing plays an important rôle for all of them; it is their resource for sustaining life when the other, more favourite, means of livelihood fail.

We must therefore content ourselves with a distinction between the occupations in winter and summer, and between the various economic apparatuses for use in winter and summer. Firstly as regards the dwelling, the Indians of the territory deviate from the Prairie Indians and from the Eskimo in that they inhabit the same kind of tent all the year round, viz., a cupolar tent of the same kind as that also employed by the southern Forest Indians, and best known from the Algonquins under the name of wigwam. This word is, however, really only the designation of the tent covered with birch-bark. The frame work consists of light, pliable tree-trunks of 2—3 metres in length, the lower ends of which are driven into the ground, while the upper ends are tied together in such a way as to form a dome. If the poles are sufficiently long and pliable, they can simply be bent into a semicircle, when both ends can be driven into the ground. In the summer the tent is only covered with bark, but in the winter with snow also. A hole is dug in the snow, about one metre deep, or as deep as the firm ground, on which the tent is pitched<sup>1</sup>. With the Kutchin-Indians in Alaska the tent has become slightly altered in form, in that the ground plan has become somewhat elliptical.

As regards contrivances for transportation there are two groups, one for summer and one for winter. The summer means of conveyance is the well known birch-bark canoe, which is so small and light that it can be carried over land from stream to stream, and yet so large that it can hold two men at least; it is propelled with a single bladed paddle, and the authors describe the strength and ease with which the Indians handle their boats. The snow shoes and the toboggan are the winter means of conveyance. Snow shoes are used by both sexes and are — to which even MASON<sup>2</sup> draws attention — an indispensable contrivance when hunting and travelling in the most northern lands. On the other hand, in the forest district the toboggan seems to have become a woman's instrument, the use of which was not greatly developed; it was drawn by women, who, however, when dogs were at hand, inspanned a couple

<sup>1</sup> SCHOOLCRAFT, p. 19 sqq., where there are also references to literature.

<sup>2</sup> MASON, p. 381. On various forms of snow shoes see KOHL, Vol. I, pp. 154—59.

to help them<sup>1</sup>. The man's only task was to make the toboggan, and if he was too lazy to do so, the woman had to put up with carrying the luggage on her back, or — as HEARNE<sup>2</sup> reports — with wrapping it up in skin, and pulling it along the ground.

Canoe, snow shoes, and toboggan are contrivances which, on account of their exact adjustment to the conditions of nature, have been able to maintain themselves even to this day. On the other hand most of the real hunting-implements disappeared fairly early, in the same ratio as trading with the Hudson Bay Co. advanced, but even in 1789 MACKENZIE found bows and arrows, as also the lances for hunting big game, in use along the Mackenzie River. HEARNE likewise mentions and illustrates a spear of this kind used for "killing reindeer in the water."

Other implements which ought to be mentioned are the two or three-pronged fish-spear; another fish-spear which was used both for throwing and thrusting, being provided with a line which was held fast in the hand or tied to the stern of the canoe; harpoon-forms where the point is released with the thrust; harpoon-arrows which are shot with a bow; a club, which, according to Mackenzie, was of reindeer antler and  $\frac{1}{2}$  metre in length; and an ice pick which was used for making holes in the ice, and was for all the northern Indian tribes an indispensable instrument, as their fishing through holes in the ice during the winter was dependent on it. Nowadays the natives buy iron picks or axes, and the original form is known only from one single report, through the legends, and from some archaeological discoveries. It consisted of a single branch from the antler of the elk or reindeer, which was fastened to a shaft of wood<sup>3</sup> 1— $1\frac{1}{2}$  m. in length.

For the sake of completeness it must be mentioned, moreover, that the Indians here mentioned knew fishing nets, which they made of willow bast. Without doubt, however, it is a late acquisition of culture. Besides large nets, the bag-nets on a frame-work fastened to a long stick, and well known from the Eskimo, were employed. Fish-hooks were also known. Even HEARNE<sup>4</sup> observed fishing with hooks through holes in the ice; and MACKENZIE<sup>5</sup> saw fishing-lines made from the sinews of animals, and hooks of wood, horn and bone. The personal outfit was not complete without a knife. MACKENZIE observed at the Mackenzie River that the Indians were in the habit of carrying a knife in a sheath which hung from the neck<sup>6</sup>.

<sup>1</sup> MACKENZIE, p. 120; FRANKLIN, I, pp. 160—61; RICHARDSON, I, Vol. II, pp. 15—16, 92—95; HENRY, p. 301.

<sup>2</sup> HEARNE, I, p. 349.

<sup>3</sup> SCHOOLCRAFT, Vol. I, pp. 88—89; HEARNE, I, p. 116; KING, p. 152.

<sup>4</sup> HEARNE, I, p. 45.

<sup>5</sup> MACKENZIE, p. 37.

<sup>6</sup> I cannot refrain from pointing to what a degree the old North Indian copper knives, for which the material was native copper procured from copper

Some of the implements mentioned were only used during the winter, and on the ice; but most of them were used during both winter and summer, although with somewhat different methods of hunting. Some of the methods of procuring a livelihood were so easy that they could be carried out by women, children and old men, but they are not of particular interest here. Among these, for example, were the catching of hares and other small mammals in snares and traps, and also certain methods of fishing. To these also belongs the fishing method well known from the Eskimo, which consisted in blocking up a stream with an arrangement of stones or with a row of stakes, which were placed so close together that salmon and sturgeon could only pass through a single opening when on their way to their spawning ground. Here the fisherman placed himself with his fishing-spear or bag-net, or put a net or a kind of trap platted from willow branches in front of the opening.

On the other hand it is the man's work to take charge of the hunting of big game, as also the more difficult task of fishing from the canoe. Each little fishing canoe holds two men; at the stern a paddler, and in the stem a fisherman who stands up spying for the fish, which, as quick as lightening, he strikes with his fishing spear or catches with his bag-net. On lakes and quiet rivers the fishing spear is the most common implement, and by signs and signals the fisherman causes the canoe to be guided in such a way as will enable him to strike the fish with his spear. At night the fishing is carried out in the same way by the light from a torch, which is placed on a pole above the fisherman's head<sup>1</sup>.

One can get a better idea of this kind of fishing by reading a description by H. Y. HIND<sup>2</sup> who has travelled amongst Ojibways and Algonquin Labrador tribes where he has had opportunity to observe fishing in quiet waters by torchlight as well as fishing at the foot of rapids; I shall be content, however, to refer to HIND's descriptions.

It was particularly with the fishing of sturgeon that a fishing spear with a line was used, which line was held in the hand or was tied to the stem of the canoe. When the sturgeon was struck it fled through the water dragging the canoe with it, until it became exhausted.<sup>3</sup> BIGSBY<sup>4</sup> relates that on one journey up a river he saw a long upright spear rushing through the water, and the next moment saw a canoe dart round a curve, with an Ojibway Indian standing erect in the stem, and another

pits, used both by Eskimo and Indians, at the most northern Rapid of the Coppermine River, Bloody Fall, call to mind forms from the European-Asiatic bronze age; cf. C. WHITNEY's figures on p. 264.

<sup>1</sup> SCHOOLCRAFT, Vol. II. p. 52, Vol. VI, plate 8; HENRY, p. 61; MC. KENNEY, p. 193; KANE, p. 31; KOHL, Vol. II, pp. 144-45, 150.

<sup>2</sup> HIND, Vol. II, pp. 98 sqq.

<sup>3</sup> FARAUD, pp. 310-11.

<sup>4</sup> BIGSBY, p. 258.

behind, who paddled. A large fish — a sturgeon, as BIGSBY assumed — had torn away with the spear attached to it.

CHARLEVOIX<sup>1</sup> gives the following description of sturgeon fishing, without, however, referring further to the "throwing spear" which he mentions. "Two men are in the canoe, each at his own end; the one behind steers, the other stands up and has in his hand a throwing spear to which is tied a long line, the other end of which is fastened to the canoe. The moment he sights a sturgeon at a suitable distance he hurls his throwing spear, and tries to strike between the laminæ of the bones. If the fish is hit it rushes away, dragging the canoe after it at a rather rapid pace, but when it has swum about 150 steps it dies, when the line is hauled in and the spoil secured."

Of great interest is a winter method of fishing used on the ice, which, when employed with seals, is known from Greenland as the *ituarpok* method. After an interval of a century it has been described by HENRY<sup>2</sup> and KOHL<sup>3</sup>, who observed it in use with the Ojibways, and SCHOOLCRAFT says that it is one of the most common methods in the northern districts. Holes of 45—60 cm. in diameter are chopped in the ice, and over them a small scaffolding of branches is raised which is covered with skin, so that the light is entirely excluded. When the fisherman lies down and puts his head into the bower with his face just above the hole he can distinguish to a great depth everything which takes place in the still, crystal-clear water and, with a fish-spear which according to KOHL may have a length of 11—12 metres, can strike any fish of which he catches a glimpse. Frequently he makes use of a bait to allure the fishes. KOHL relates, further, that where there is a current in the sea water, as for example where a river debouches, a furrow 8—9 m. long is chopped in the ice from the hole and to the current, through which an assistant with the aid of a long line supports and steers the long fish spear according to the signals of the fisherman. With this method of fishing on the ice the harpoon does not seem to have been employed. Probably the method has only been used in places where one could see the bottom. Harpoons, however, have been in general use in open water, and this has probably also been the case when catching large sturgeon and salmon by fishing through holes in the ice, a method so generally carried on.

When the hunting of big game is mentioned, it must be remembered, as previously stated, that on the one side there is a transition region towards the prairie, and that, on the other side, the Indians advance on the tundra to some extent. This is reflected in the methods of hunting. The hunting of elk in the pinewoods does not greatly differ

<sup>1</sup> CHARLEVOIX, I, Vol. 3, p. 154.

<sup>2</sup> HENRY, p. 66.

<sup>3</sup> KOHL, Vol. II, pp. 147—49.

from the forest hunting in the east of the United States of America, where the ability to follow up the trail of the game is the most important demand made on the hunter. Consequently he has to have the most exact knowledge of the mode of living, favourite food, trail, and general movements of the game, when, by the aid of numerous precautions and boundless patience he ought to be able to approach his victim. A further description of these modes of procedure is not wanted here, partly because they are well known from elsewhere, and partly because they cannot be of great interest in the connection in question. It will only be mentioned that in the pine forests the hunter makes extensive use of the birch-bark canoe, which he partly uses at night to get within gunshot of the drinking animals<sup>1</sup>, and partly uses to hunt the swimming elks. By preference these live in lake districts with many islets, and, besides, generally have fixed tracks, along which they move and cross the rivers. In such places the hunter lies in hiding with his canoe, in order to pursue the swimming animal, which he can easily overtake and kill. This method of hunting is mentioned by FARAU<sup>2</sup> and HEARNE<sup>3</sup> from the Hudson forest-lands, and by WHYMPER<sup>4</sup> from the Yukon Valley.

The protracted covering of snow during winter, as also the ice, must naturally also cause peculiarity in the methods of hunting. When the snow lies so deep that the elks can only with difficulty work their way along, the hunter who is on snow shoes runs down his animal, and drives it in front of him to a river, where he then kills it, in order to avoid the difficult transport through the forest<sup>5</sup>.

It is common with the Forest Indians and the Tundra Indians as also with the Central Eskimo to follow the trail in the snow, and steal upon the victim by putting on the skin of a deer and imitating its movements<sup>6</sup>.

On the tundra, again, the hunting is different from what it is in the forest, in that, here, it is not a question of a single animal, but of reindeer living in herds. When on their wanderings in spring and autumn the herds move to the sea coast or the tundra, and back to more southern regions, they have some fixed tracks which they generally follow, and certain places where they cross the rivers. At these places, which the Indians know so well, the latter lie in hiding with their canoes. The mode of procedure is described by R. KING<sup>7</sup>: "The natives, seated in their canoes, remain in ambush until the first two or three animals have

<sup>1</sup> SCHOOLCRAFT, Vol. II, p. 53 sqq.

<sup>2</sup> FARAU<sup>D</sup>, pp. 305—306.

<sup>3</sup> HEARNE, I, p. 289.

<sup>4</sup> WHYMPER, I, pp. 214—215.

<sup>5</sup> W. PIKE, II, p. 95.

<sup>6</sup> FRANKLIN, I, p. 244; FARAU<sup>D</sup>, pp. 304—306; KLUTSCHAK.

<sup>7</sup> R. KING, Vol. I, pp. 254—55.

landed on the opposite shore; when they dart forward from all quarters, and spear them in vast numbers, fully aware that the deer, like a flock of sheep, will follow their guides notwithstanding the intrusion."

In the spring of 1834, BACK and KING at Back's River (64°40' N. lat., 108° W. long.) met a group of Red Indians who here were accustomed to lie in wait for the reindeer herds. That year, however, the reindeer had come before their pursuers, and the Indians found themselves obliged to feed on the flesh of the musk ox, which is not relished by them, as it is by the Eskimo.

In the early summer, as soon as the reindeer have arrived on the tundra, the Indians prosecute a lively killing of the new-born calves, the skin of which is much sought after for underclothing. In the course of the summer a battue is arranged from time to time, inasmuch as women and children surround a herd, and drive it out into a river or lake, where the men lie in hiding with their canoes<sup>1</sup>. The principal yield from the hunting is, however, procured in the autumn, when the reindeer are fat and begin to wander southwards. It is especially on this occasion that the Tundra Indians, like the Prairie Indians and the Eskimo, employ hunting fences. Such fences are mentioned from all districts of the tundra, from the Barren Grounds, and from Alaska north of the Yukon and the Koyukuk. By means of two convergent rows of poles, which may be several kilometres long, the herd is directed out into a lake, where the animals are pushed down from a canoe, — into a fold where they are killed with arrows, or into a kind of maze where they are caught in nooses and snares. The meat which they may procure on such an occasion is prepared into pemmican: dried and pounded meat mixed with fat, which can keep for a long time<sup>2</sup>.

**Comparison between North-Indian and Palæskimo Forms of Economic Culture.** Two North-Indian forms of economic culture have now been outlined, the reciprocal diversities of which must, no doubt, be ascribed exclusively to adaptation, according to the various geographical conditions. Like the Eskimo culture — especially the Arctic type of this — they are both distinctly divided into a summer and a winter phase.

When we now try to set up a comparison between these forms of culture and the Palæskimo economic culture we must particularly think of the Arctic Eskimo culture in the Archipelago; because anthropogeographical conditions indicate the Archipelago as being the place of origin of the Palæskimo culture.

If, first, we take into consideration the summer culture, we find

<sup>1</sup> MACKENZIE, pp. CXXV, 38; HEARNE, I, pp. 70—71, 154—155; J. W. TYRREL, pp. 80 sqq.

<sup>2</sup> MACKENZIE, p. CXXI; HEARNE, I, pp. 74, 113—116, 121—309, 348; FRANKLIN, I, p. 243; RICHARDSON, Vol. I, pp. 393—394, Vol. II, p. 25; SIMPSON, I, pp. 311—312; KING, pp. 154 sqq.; WHYMPER, I, p. 182.

on the one side the most exact conformity between the northern Prairie Indians and the Tundra Indians, or those Forest Indians who spend the summer on the tundra, and, on the other side, the Arctic Eskimo. It is quite characteristic of the latter that they spend the summer in the interior, where they live in tents and carry on salmon fishing and reindeer hunting. The methods of hunting are the same with Eskimo and Indians; but the hunting within fences is especially conspicuous. The diversities are only such as are involved in the altered geographical conditions. On the prairie the animal hunted, in the proper sense of the word, is the bison; on the tundra it is the reindeer. The Forest Indians use the birch-bark canoe — also during their summer stay on the tundra. The Eskimo who are debarred from the forest have had to resort to skin for covering their boats. Indeed, even the difference between the river kayak of skin and certain — older — forms of birch-bark canoes can, I think, be reduced essentially to a difference in material.

When we then regard the winter culture, there at once appears to be a great difference. But this difference will, however, prove to be more apparent than essential in kind. The characteristic of the Eskimo is the life on the smooth winter ice with its methods of ice-hunting, and the snow house. What the facts as regards the origin of the snow house and of the other forms of Eskimo houses are, I shall endeavour to unravel in the following section.

Then there remains the methods of hunting on the ice, as also the winter hunting of the musk ox, still occasionally employed, which formerly seems to have been of great importance. The methods and expedients used with this musk-ox hunting correspond with those of the Prairie Indians on their winter bison hunting.

As regards the methods of hunting seals on the ice, the described culture of the Forest Indians has methods which are in reality also precursors of these. Naturally one cannot expect to find precursors of the Utok method, as this spring hunting method is in such a special degree due to a peculiarity which only the seals exhibit in their mode of living, e. g., that they creep up onto the surface of the ice in order to sun themselves. The Maupok method, on the other hand, is nothing but an adaptation to the fishing through holes in the ice so commonly carried on in the Hudson regions, which are so rich in rivers and lakes. Another old Eskimo method of seal hunting, viz., the *ituarpok* method was even rediscovered direct<sup>1</sup>.

When regarding the forms of the winter implements there is a greater

<sup>1</sup> The method, however, is — as little as the ice-fishing on the whole — hardly “Hudson” in its origin, it is refound with the remaining methods of hunting on the ice at the rivers of Northern Siberia. Probably it has come from Asia with the Palaeasiatic-American expansion of culture which presumably took place long previous to there being a question of any kind of Eskimo culture.

difference between the Eskimo and the Prairie and Forest Indian forms, than there seems to be between the forms of the summer implements. Even the river kayak could probably be traced back rather closely to certain forms of the birch-bark canoe; but as regards the Eskimo forms of harpoons and sledges the matter is somewhat different. The snow shoes, on the other hand, are not essentially different. The sledge is of quite another type than the Indian toboggan, and the harpoons display a development and richness in form for which we have no match in the Forest region. In these respects, therefore, the Eskimo winter culture shows a peculiar stamp, which must be considered partly to be caused by the separate development brought about by the great possibilities which the hunting of seals on the ice presents and by the special demands made by this, and partly to be due to influences from without. We must remember that the observed arctic winter culture is not the original Palæeskimo winter culture, but a Neoeskimo form i. e. a mixture of Palæeskimo adaptative culture with foreign influences. Only if in the Archipelago we had still had a Palæeskimo culture, should we be able to observe direct the special development brought about by the hunting on sea ice.

Thus, when we collect these observations of a comparative character, we see that the Palæeskimo culture, from the summer point of view, has, or I should say had, not deviated essentially from the North Indian culture. From the winter point of view, on the other hand, it is different; but our investigation of the nature of this diversity, however, also leads the winter culture back to the same source. In this way these observations lead to the following result:

The Palæeskimo culture was an original North Indian form of culture, the winter side of which had become specially and strongly developed by adaptation to the winter ice of the Arctic Ocean.

## Types of Eskimo Dwellings.

(Hereto belongs a plate.)

When to this anthropogeographical work I wish to add a section on Eskimo house types, and to regard these from a more ethnological point of view, it is for various reasons.

In the previous chapters special regard has been paid to the methods of hunting, and less to the dwelling, which, however, is also of great anthropogeographical importance. Moreover, in my work of 1905, I subjected the Eskimo house-structure to the result of my considerations at that time, but that result I cannot now approve of. This refers to the view that the Mackenzie house originated direct from the North American prairie house. At the time mentioned, LEWIS H. MORGAN's work was essentially the only one to hand about North American house-structure, and he employed a more sociological method, and set himself quite a different task from that which now lies before us. In works of travel hardly anything, or only scattered information, was to hand about North Asiatic house-structure. Since 1905 some valuable works have appeared, of which I lay stress on E. SÄRFERT's paper from 1908 on North American house-types and on H. T. SIRELIUS's papers on the primitive dwellings in Northern Asia from 1906—1909, and in addition to the works of BOGORAZ and JOCHELSON. Finally, regarded from a modern sociological point of view, the Eskimo dwellings have been treated by M. MAUSS and H. BEUCHAT.

In the previous chapters I have already drawn attention to the fact that the form of the Eskimo houses varies considerably, not only because there are forms for use at different seasons, but also because there are forms which seem to show that the history of their origin must be different. I mentioned the summer dwelling or skin tent, the snow house or dwelling for winter travelling and hunting, as also some forms of winter houses.

A division of the last mentioned has lately been given by W. THALBITZER<sup>1</sup>. He distinguishes between three types of these Eskimo houses: 1) The roundish, dome-shaped type, with whale bone as material, 2) the rectangular type, in which the material consists of wood, stones, and turf; and 3) the pear-shaped house, mainly built of stones and turf.

The five different types of dwellings, however, do not entirely exhaust the whole series of house-forms existing amongst the Eskimo.

<sup>1</sup> W. THALBITZER, II, p. 352 sqq.

In any case three forms can be mentioned which occur with the Eskimo, although with a limited distribution. These three forms are the North-West Indian houses of planks, the pile-dwelling, and also the double winter tent, originating from the reindeer nomad<sup>1</sup> and now adopted and used by the Asiatic Eskimo and the Eskimo in St. Lawrence Island<sup>2</sup>.

The North-West Indian plank-house, which at times occurs in the form of a log-house, is still found with the Chukches as a winter dwelling, and it is also said to occur with the Kenai-Indians. With the Eskimo in South Alaska we immediately, however, find an earth-covered house as a winter dwelling, while the plank-house occurs as a summer dwelling in the summer settlements, which are inhabited during the fishing season. Where the forest ceases the plank-house disappears, and the skin tent predominates as a summer dwelling<sup>3</sup>.

While the Eskimo have got this plank-house from the North-West Indians they have got the pile-dwelling from North-East Asia. It is a well known fact that Palaeasiatic people in North-East Asia, such as the Gilyaks and Kamchadales, use the pile-dwelling as their summer residence. The origin of this pile-work form, however, points still further south across Japan and right to South-East Asia. In Alaska, the pile-dwelling as a summer dwelling has already been mentioned from the islands in Bering Strait, and in this connection is especially known from King's Island. But it also occurs on the coast of Alaska itself; not, however, as a dwelling but as a store-house. Thus PETROFF<sup>3</sup> says about the Kuskoquim district "the store-houses of all the Eskimo tribes are set on posts at a height of from 8—10 feet above the ground, to protect them against foxes, wolves, and dogs."

According to MURDOCH the pile-work structure is found at Point Barrow in the form of stands for preserving and drying meat and such like, and similar stands are found again right towards the east, for instance in Baffin Land, and also in Greenland, where they are commonly employed.

We now come to THALBITZER's three types of winter houses, with regard to which I shall first remark that main stress must be laid on the groundplan and manner of construction, while the material employed ranks only secondarily; as, in this respect, one employs what lies ready to hand. Naturally it alters the house if whales' bones are adopted after wood has been employed, or if, perhaps, stone is exclusively used. But the point is to discover the original type just through such alterations as are involved.

Firstly I mention "the pear-shaped house." This is built by exclusively employing stones and turf, and by that alone betrays itself

<sup>1</sup> BOGORAZ, p. 180.

<sup>2</sup> SARFERT, p. 54.

<sup>3</sup> PETROFF, p. 128; cf. NELSON, I, p. 244.

as a non-original form of structure; it is a house type which has originated in districts where wood and whales' bones have been lacking. That this is also evident from its construction one will easily see from the descriptions. I will refer to my own description and illustration in M. o. G., Vol. 34, p. 107 and pp. 311 sqq. (cf. the plate in this volume, fig. 2).

Thus I have endeavoured to show that the "pear-shaped house" must originate from a rectangular house, where whales' bones have been the most important building material. In favour of this I may say, firstly that one finds in the same district old remains of rectangular houses which also were somewhat larger than the present stone houses<sup>1</sup>, and secondly that it appears from the construction itself, with stones which project in pairs opposite each other and help to carry the roof, that in these places the construction at one time must have had beams lying from right to left in order to carry the roof. It is distinctly evident that such a main beam (of wood or possibly of whale bone) must have lain across the centre and just where the main platform began<sup>2</sup>. As a third argument I may now quote the result of the Danmark Expedition to the north coast of Greenland; a glance at THOSTRUP's figures shows that small rectangular houses have been used side by side with such as approach the pear-shaped type<sup>3</sup>.

From this it follows that THALBITZER<sup>4</sup> cannot be right when he regards the pear-shaped house as a relic of the Mackenzie Eskimo house. This building being constructed on quite a different principle, and the similarity in the inner arrangement also being only superficial, inasmuch as the side platforms in the Mackenzie house have the same value as the hindmost platform, while in the pear-shaped house only the hindmost platform is for human use, the side platforms being small lamp platforms.

If on the other hand one wishes to find a house-type which, both in its construction and in its arrangement, shows affinity with the pear-shaped house as well as with the small rectangular house from the north-east coast of Greenland, one must go to Point Barrow. The main feature in the construction of the pear-shaped house, viz., the above mentioned couple of projecting stones at the fore end of the main platform, recurs in the Point Barrow house in the form of a main beam, which carries the roof, which in reality in both cases, according to its construction, is a gable roof, even if the outer covering of earth hides this, and even if the difficulty in finding a sufficiently long beam may cause the house to have a greater extent from the front to the back than from the right to the left (cf. figs. 1—4 on the plate).

The arrangement of the platform, the lamps, the house passage

<sup>1</sup> L. c., p. 307.

<sup>2</sup> Cf. M. o. G., Vol. 34, figs. 8—10.

<sup>3</sup> M. o. G., 44, Pl. II.

<sup>4</sup> M. o. G., Vol. 34, pp. 360—361.

and the entrance from below is the same. Only as regards the window is there a difference of a rather immaterial character, because the Polar Eskimo have had to move the window down on the front side of the house, just above the house passage; while the original window has been retained as a small opening ("the nose of the house").

There is also a congruity in the way that the two forms of houses are placed on the ground, inasmuch as both are placed on slightly sloping ground, and generally near the top of a low hill. As regards the material, the Point Barrow house is constructed of wood, and, which is of no small interest, even planks are employed. According to MURDOCH even whales' bones may enter into the structure, earth being heaped over the whole.

To imagine this Point Barrow house transplanted to regions where there is neither wood nor whales' bones is to imagine the beams replaced by a kind of cantilever construction of stones, and then one has the pear-shaped house, the form of which is only a result of this forced construction. It is best known from the regions at Smith Sound. But yet, as mentioned, approximate forms also occur on the north-east coast of Greenland; though only in ruins. Its distribution is still almost unknown in the North American Archipelago, although it is probable that it is just in the Archipelago with its lack of wood as well as of whales' bones that the Point Barrow house type has first had to change into the pear-shaped house.

We shall now proceed to a further consideration of the Eskimo house of a rectangular type. THALBITZER draws attention to the fact that it is found both in Alaska and in Greenland, and he is justified in saying that one gets the impression that the house from Point Barrow, described by MURDOCH, "is not very different from the rectangular house we find in South Greenland and Angmagsalik."

The principal difference lies in the size. The Point Barrow house is small, and for two families at the utmost, while the South Greenland house may be for several families. On comparing HOLM's figure (fig. 4 on the plate) of a transverse section of an Angmagsalik house with the corresponding one from Point Barrow by MURDOCH, one gets an impression of the affinity in construction; but a comparison of the ground-plans shows the difference in size. Elsewhere<sup>1</sup> I have tried to show that the South Greenland common-house must be thought to have come about through a row of houses lying side by side being built into one. In other words the idea which has been carried out here is quite different from that which underlies the Mackenzie house, which likewise can contain a larger number of families (up to two in each niche or six families in all). This also shows distinctly that the pear-shaped house is not an off-shoot of the Mackenzie house. If such were the case there

<sup>1</sup> M. o. G., Vol. 34, pp. 322 sqq.

is no doubt that in South Greenland, on account of the greater supply of drift-wood, an attempt would once more have been made to realize the Mackenzie house.

Now, on the other hand, a common-house has been made which distinctly evinces the relationship with the two North-Greenland small forms of houses, the pear-shaped house and the small rectangular house. As mentioned, these two are really of the same kind, inasmuch as the rectangular house necessarily must merge into the so-called "pear-shaped house" the moment the stones have to be employed exclusively. In 1909 I was inclined to regard the "pear-shaped house" as the only direct precursor of the South Greenland common-house. At that time it was not so evident, as was made clear by the Danmark Expedition, what a great rôle the small rectangular house has played in North Greenland, though, even then, the existence of that house form was not unknown. From the regions about Scoresby Sound it was known from RYDER's<sup>1</sup> and AMDRUP's<sup>2</sup> reports of their expeditions. From North-western Greenland at Wolstenholm Sound it was known to me partly from verbal information from KNUD RASMUSSEN and partly from my own observations.

Thus, I shall only point out that the result is that the South Greenland common-house originates both from a pear-shaped house and from a small rectangular house like that we know from the north-west and north-east coasts of Greenland, and that by the way in which it is arranged it plainly shows that it has got its interior arrangement from the building together of small houses lying side by side (cf. M. o. G., Vol. 34, p. 328, Figs. 14, 15 and 16)<sup>3</sup>.

In this way, then, the predecessor of the South-Greenland common-house dates right back to the house-type at Point Barrow or to the rectangular house with a wooden structure and a covering of earth. When whales' bones have been employed, these have entered into the structure as a direct substitute for wooden beams or planks, and one must keep this construction distinct from a quite different one, into

<sup>1</sup> RYDER, pp. 296 sqq.

<sup>2</sup> AMDRUP, pp. 314 sqq.

<sup>3</sup> AMDRUP and RYDER both were of opinion that the small rectangular houses were precursors of the large common-house, whereas now BIRKET-SMITH thinks that the small house is to be considered as a simplification of the large one. Even if BIRKET-SMITH is evidently right when on account of the distribution of different implements both on the west coast and on a considerable part of the east coast, he decides that at a certain period migrations from the west coast to east coast must have taken place, I am not inclined to agree with him in his conception of the origin of the small rectangular house. I would rather believe that the development of the big common-house took place at a later period than the migrations which he refers to.

which whales' bones may also enter, and which was called the round, dome-shaped type; this will be mentioned later.

The distribution of the rectangular house in the Central Archipelago, Baffin Land and Labrador is but little known. As mentioned, it is probable that even in the Archipelago it was early merged into a pear-shaped form. It is also probable that in some places it is intermingled with the round type of house which otherwise has been predominant in the Archipelago. It seems as if BOAS's observations from Baffin Land may indicate this<sup>1</sup>.

In Alaska, however, the rectangular house plays a great rôle. Besides the before mentioned younger forms two types of houses are predominant in Alaska, one of which is decidedly rectangular, while the second perhaps seems to be derived from a square form. It is, however, just the origin and history of development of these house-forms which we now shall try to find out. For convenience sake we may again call the first type the Point Barrow type, because Point Barrow is the place in Alaska where we first met with this form, while the other was long ago named after the Mackenzie Eskimo.

The Mackenzie house was the predominant one with that group of Eskimo which we have here named after the Mackenzie River. In addition it occurred at Kotzebue Sound, although here it was not predominant<sup>2</sup>. A house of the Point Barrow type is predominant, on the other hand, along the entire west coast of Alaska from Point Barrow to the region south of the mouth of the Kuskoquim River. SARFERT describes it as the typical West Eskimo house, which, however, might be misunderstood, as the most ancient West Eskimo house probably was of a still older type (the round dome-shaped type). On the Aleutian Islands underground houses occurred originally, which were of considerable size, and held several families; they were probably built with the aid of drift-wood and whales' bones, and were probably a form of this rectangular house.

According to PALLAS the houses in Unalaska were dug a fathom deep in the ground, and covered with drift-wood. In Kadiak are found remains of underground houses which seem to be of the same type as the house in the Aleutian Islands<sup>3</sup>. It is possible that this common-house represents a form of development which is parallel to the common-house in Greenland; SARFERT<sup>4</sup>, however, is probably right in assuming that it originally came from the Asiatic Pacific Coast, where such large houses were formerly in use.

On further observing the house of the Point Barrow type, or the predominant winter house in West Alaska, we get through the forms

<sup>1</sup> The Central Eskimo, pp. 494—502.

<sup>2</sup> COLLINSON, III, [Fig.]; SIMPSON, III, pp. 932 sqq.

<sup>3</sup> Cf. JOCHELSON, p. 464.

<sup>4</sup> SARFERT, pp. 61—62.

here a still stronger impression of it being a rectangular gable-house, where the supports are formed of wooden beams. The rôle which wooden planks generally play in the covering of floors, walls and platforms is a point of special interest, and shows that the house must originate from more southern parts of the globe.

The house itself is dug somewhat down into the ground, and then covered with earth, so that one is not wrong in calling it "underground." The entrance to the house which, on account of the covering of earth is from the outside not of the gable type but roundish, is through a low, underground passage which leads into the house in the middle of the one side (originally the long side) facing the main platform. The entrance is frequently double, inasmuch as there is a high lying passage for use in summer and a low lying one for use in winter<sup>1</sup>. The same is found in Asia. The habit of using the top-hole of the house as an entrance, well known to the Palæasiatics, recurs in America, it was found, for example with the Aleuts. On the Asiatic side of Bering Strait, where whales' bones must almost entirely replace drift-wood, and where, as before mentioned, the form of dwelling is influenced from the interior of Asia, the rectangular house occurs in a somewhat changed variant<sup>2</sup>, which, however, may easily have been related to the Aleutian house, such as PETROFF<sup>3</sup> describes it.

There can be no doubt that the described house type originates from more southern latitudes. Form, material, and construction bear witness to this. Everything bears the impress of its having originated from regions with an abundance of wood, and from districts with such a mild climate that houses of wood have been used, at any rate posts of wood, the walls being of planks, mats, or perhaps wattle, and not covered with earth.

As SARFERT points out, a rectangular earth-house is really a *contradiccio in adjecto*, for which reason it must be assumed that "der vier-eckige Erdbau sich aus dem viereckigen Holzhaus entwickelte oder sich zum mindesten an ihn anlehnte."

The question is, then, from where can this rectangular house which was transformed into an earth-house originate. There are at once two places which are conspicuous viz., North-Western America (the North-West Indians) and North-Eastern Asia (the Pacific-Asiatic region). The North-West Indian house, however, has scarcely exercised any greater influence than has already been mentioned from South Alaska, where it becomes the summer dwelling at the fishing places. Nor does a glance at the construction and plan-work show that the one has been the direct model for the other.

<sup>1</sup> Attention is specially directed to NELSON's description and illustrations of Eskimo houses from Alaska (NELSON, I, pp. 241 sqq.).

<sup>2</sup> BOGORAZ, pp. 180 sqq.

<sup>3</sup> PETROFF, p. 128.

Different forms of earth-houses occur however in North-America besides; a rectangular earth-house is also known from Northern California. There cannot, however, be any question of its being one of these forms which has been transferred to the Eskimo domain. The type is quite different. There is no doubt that JOCHELSON<sup>1</sup> is right when, on the basis of his investigations, he says "we may draw the conclusion that the underground houses of the Paleasiatic tribes bear more similarity to those of the Aleuts and Alaskan Eskimos than to the underground dwellings of the North-Western Indians."

In this way nothing remains but North-East Asia. We must assume that the rectangular earth-house is due to Asiatic influence exerted along the Pacific Coast. SARFERT<sup>2</sup> also assumes something of the same sort when he emphasizes some features which he thinks are to be found both with Aleuts and Alaskan Eskimo, and in the older houses which formerly were in use with the Kamchadales, Koryaks and Gilyaks. Still further south we find semi-underground rectangular houses which from outside appear like round hills. R. HITCHCOCK<sup>3</sup> has observed such on a small island Thikotan off the east coast of Jesso, and he supposes that similar houses formerly played a rôle on Jesso, where he could see the hollows where the houses had been.

There still remains to be mentioned that form of an apparently rectangular house which we have called the Mackenzie-house. Formerly I assumed that it was a further development of the earth-covered prairie-house, which, through CATLIN's and the PRINCE OF WIED's descriptions for example, we know so well from the Mandans. Thus I thought that the Mackenzie house was an original round house like this prairie-house, and that it had adjusted itself to this peculiar cross-form in the ground-plan. I supposed that this form of house might have struck root at the mouth of the Mackenzie on account of the great richness in drift-wood. Now, however, I must admit that THALBITZER is right when he, on the basis of SIRELIUS's work, points to Asia as the place of origin for this form of house.

It seems to me that in reality the history of the development and origin of the Mackenzie house is now manifest. The source of origin must be a form like that which, according to SCHRENCK, we find with the Gilyaks. It is an earth-covered, approximately square house with four posts in the centre which carry the obliquely placed poles or beams which form the walls and the roof. Inside, out from the three sides, rectangular platforms are placed, while the entrance is found in the fourth side. The fire place is in the middle of the floor. A form of house quite corresponding with this is found with the Koryaks<sup>4</sup>. Next it is

<sup>1</sup> JOCHELSON, p. 446.

<sup>2</sup> SARFERT, pp. 61-62.

<sup>3</sup> HITCHCOCK, p. 425, Fig. 65 and Plate LXXIX.

<sup>4</sup> JOCHELSON, p. 454.

refound at Kotzebue Sound on the coast of Alaska, and finally in the Mackenzie district<sup>1</sup> (cf. figs. 5 and 6 on the plate).

When these northern regions are reached, there are two facts, however, which assert themselves. Firstly the wood-fire in the middle of the floor of the house has to be relinquished and replaced by the blubber-lamp, secondly the cold becomes more perceptible. These two facts enforce the avoidance of any superfluous space which would make the warming up of the house more difficult. The problem is solved by filling up the platformless space between the platforms, the outer walls being drawn in to the platforms themselves, which thereby come to lie in niches. Finally the construction is thus so altered that the roof becomes flatter and lower, and the space becomes restricted by this also.

By these means a house is attained which can comparatively easily be warmed up, and which can nevertheless hold a relatively large number of inhabitants. The geographical distribution of this house in America enters like a wedge into the West Eskimo domain from Kotzebue Sound to the Mackenzie region (in this connection one must remember that the most used route of communication from Kotzebue Sound to the Mackenzie does not go round the coast past Point Barrow but straight across country along Colville River to the coast of the Arctic), and this condition of distribution may perhaps indicate that this form of house has arrived at a later date than the rectangular house. Like the latter, however, one must suppose that it originates from Asia, and that it has been introduced along the coast route; but it seems that not until the Mackenzie-domain is reached do we find it finally adapted to the conditions of Arctic winter dwelling. This explanation is more probable than SARFERT's assumption that the whole development from an ordinary rectangular house into a Mackenzie house must have taken place in America amongst the Eskimo. To this must be added that SIRELIUS has now shown how the Gilyak earth-house, which in my opinion represents the primitive form of the Mackenzie house, has eventuated from the conical tent, in that this, as a support for the roof, is provided with four, or sometimes more, inside wooden pillars. So far, therefore, the Mackenzie house originates from a circular building; but the point of origin is in Asia and not in America. Thus I agree with THALBITZER<sup>2</sup> as regards the possibility of the Mackenzie house finally being traced back to the Siberian "earth tent"; but I do not agree with him when he assumes that it is one of the most ancient Eskimo domiciliary forms. Necessarily it must have found its way into Alaska at a secondary period, no matter whether it came later than the rectangular house, or even if it perhaps came somewhat before this.

In this way the forms of the Eskimo houses which have been

<sup>1</sup> Cf. SARFERT, pp. 56 sqq.

<sup>2</sup> M. o. G., Vol. 39, p. 361.

previously mentioned all seem to originate from Asia, setting aside the North-West American plank-house, which, also, no doubt, will ultimately prove to be of Asiatic origin. The lately introduced forms, such as the pile-work and winter dwelling adopted from the Chukches, are of the smallest importance as regards dwellings. The so called Mackenzie house stopped at the Mackenzie area, and it is probable that lack of wood determined the limit. On the other hand the rectangular house of the Point Barrow type extended into Greenland to the eastern boundary of the Eskimo, though it had to be converted into a pearshaped house locally where only stones were to hand; into the small rectangular house in districts where the wood was replaced by whales' bones; and finally into a large common-house in South Greenland.

The whole of this group of houses has been adopted by the Eskimo in the districts round Bering Strait — in the second geographical focus of the development of the Eskimo culture, — and therefore, pursuant to the established terminology, must be designated as *Neoeskimo*.

There now remain to be mentioned some forms of dwellings which will prove to represent the oldest development of Eskimo culture in the Arctic Archipelago — the first geographical focus — whence they have spread as far west and east as the primary Arctic distribution has reached.

While the first-mentioned group consisted principally of rectangular houses, this second group consists of forms with a circular ground-plan. The tent, the snow house, and the before mentioned winter house of a circular dome-shaped type belong to this group.

Often it may be difficult to keep the last mentioned separate from the winter houses of the *Neoeskimo* group. As a rule the latter from outside also appear like round hills of earth, so that it is only by the interior or by the ground-plan that they can be distinguished. To this must be added that a rectangular house, where wood disappears or decreases in importance, has a natural inclination to change to a roundish form. This appears distinctly in the pear-shaped house, and is also observed as regards the rectangular houses.

Firstly I will mention the tent, because the circumstances as regards this are clearest. A tent of reindeer skin is the typical summer dwelling of the Eskimo from Alaska to Greenland and Labrador. It appears, however, in a somewhat different form. The dome-shaped tent known from the Indians in the forest regions in Alaska and the Hudson lands, which generally and justly is regarded as the old, original form for a summer dwelling occurs at Kotzebue Sound<sup>1</sup>, and the summer house at the Lower Kuskoquim described and illustrated by PETROFF<sup>2</sup> likewise has the form of the dome tent. For the rest, the Western Eskimo seem to use tents which are conical, like the "tipi" tents from the prairie,

<sup>1</sup> SARFERT, p. 25.

<sup>2</sup> PETROFF, p. 128.

and like these must be regarded as derived from the dome tent. The conical tent is not very spacious, but it requires fewer skins than most other forms of tents. For this reason it is also occasionally found with the Central Eskimo in a small dwarfed form, which is only pitched where there is a lack of skins<sup>1</sup>.

With the Central and Eastern Eskimo, however, we find a somewhat different form of tent, which must also be regarded as a conversion and a more direct one of the dome-shaped tent. When one gets to northern regions where drift-wood and whales' bones are the only material fit for use as tent supports, one cannot make the dome-shaped tent, as this requires young pliable stems from the forest.

One must therefore be contented with making a single arch or frame, over which the framework is then placed, and in such a way that the tent is highest in front. Behind, the ground-plan is a circular arch, which is cut straight off in front.

A tent of this simple type is still in use with some central and eastern tribes, for example the *Angmagsaliks*<sup>2</sup>; in order to increase the space, the lower end of the tent poles may be fixed in a mound of earth and stones instead of being placed in the ground itself. In West Greenland the tent has an addition in front of a rectangular extension, a new frame being connected with the door-frame by horizontal poles.

With the Central Eskimo, the tents with a rectangular front part seem to predominate<sup>3</sup>. On an average, however, the tents of the Central Eskimo are worse made than those of the Greenlanders on account of the greater scarcity of wood. This, for example, appears in the cases from Iglulik and other places emphasized by BOAS, where wood is rare, and where the carrying frames are replaced by perpendicular poles of wood or bones, while the horizontal bars in the ante-space are replaced by a horizontal cord. In these cases, however, the back of the tent has preserved its circular form. On the other hand this is not the case in Labrador, where it has disappeared, and only the rectangular front has remained. SARFERT likewise explains that the arrival of this form of tent is due to lack of wood, and I believe he is right. In 1909 I found the same form of tent in use in West Greenland in the district round Egedesminde, and I then<sup>4</sup> assumed that perhaps it might be due to European influence. This, however, can scarcely have been the case, all the more so because, according to verbal reports to me from KNUD RASMUSSEN, the same form of tent may be found now and then amongst the Polar Eskimo.

After the tent I will mention the roundish, dome-shaped type of Eskimo house, but I must remark at once that undoubtedly my con-

<sup>1</sup> BOAS II, pp. 552—553.

<sup>2</sup> BOAS II, pp. 552—553.

<sup>3</sup> Cf. SARFERT, pp. 26 sqq.; BOAS II, pp. 559 sqq.; KLUTSCHAK, p. 139.

<sup>4</sup> M. o. G., Vol. 50, pp. 155 sqq.

ception of this type is quite different from that of THALBITZER and other authors.

I do not lay main stress on the fact that it has preferably been erected by employing whales' bones. Whales' bones can also act as a substitute for wood in forms of houses which have quite a different origin than the form mentioned. It cannot be the full explanation, as MAUSS and BEUCHAT think, that it is the exclusive employment of whales' bones which results in the arrival of a new type of house which is "petite, penchante, a forme circulaire ou elliptique. Le mur est recouvert de peaux, recouvertes, a leur tour, de gazon; ...."<sup>1</sup>.

What however, in my opinion, is characteristic of this dome-shaped house is that it descends direct from the tent in its Central and Eastern-Eskimo primitive form, or more correctly, is nothing else but this tent furnished as a winter dwelling with a passage and a cover of earth, plant material, or snow on the top of the skin-covering. In the next place it is either dug into the ground somewhat, or has a mound of earth and stones. The framework is as with the tent mentioned from the Central and Eastern Eskimo; in front there is a supporting arch or frame which carries the remaining framework of sloping bars. Similar examples of a form of tent having passed over into an earth-tent are known from North Asia (cf. SIRELIUS). The fact is not unique, but is a well known phenomenon.

Houses of the type mentioned are described by BOAS from the Central Eskimo, where they are called *qarmang*. Houses of this type have a passage of stone, and the arrangement inside is the one also known from the rectangular houses with a broad platform at the back and side platforms for lamps and cooking utensils. The framework is carried by the rib of the whale which forms an arch. "The whole curve formed by the rib is covered with a window of seal intestines, while the poles are covered with sealskins, which are fastened in front to the whale-rib. .... The roof is covered with a thick layer of *Andromeda*, and another skin, .... is spread over both covers." The houses before mentioned from the Melville Peninsula have, I think, originally been of the same kind.

No doubt, houses of this type are no longer found with the Western Eskimo with the exception of the Eskimo on the Asiatic side of Bering Strait. From here NELSON mentions and illustrates houses with a somewhat oval ground-plan, which apparently must be accounted to this district. That the tent as a winter dwelling has been able to hold its own on the Asiatic coast while it has disappeared on the Alaskan coast (it is not predominant in Asia however; as already mentioned, other forms of winter houses are now generally used) is quite interesting.

Apparently this dome-shaped house has also existed in Greenland.

<sup>1</sup> MAUSS and BEUCHAT, p. 73.

According to verbal information from KNUD RASMUSSEN there exist in Melville Bay old house-ruins of an oval form which according to his information seem probably to be of this type. How far ruins of a similar type occur south of Melville Bay is not known. K. BIRKET-SMITH has lately described some ruins from Southern Greenland which he likens to houses from Baffin Land which are indubitable earth-tents. He from GEORGE BEST's "True Discourse of the three Voyages . . . under the conduct of MARTIN FROBISHER," first cites a very striking description of such semi-underground houses with a framework of whales' bones and a roof of skins, and then he tries to show that such houses have existed on the Greenland side of Davis Strait<sup>1</sup>. BIRKET-SMITH, however, does not distinguish, as we do here, between a dome-shaped type of house which originates from the tent, and a rectangular house of quite a different origin. Therefore he can compare the house from Baffin Land with the house ruins from Julianehaab which for the rest he apparently correctly considers to be old rectangular small houses from the time before the common house. Yet, further, I agree with him when he expresses some doubt as to whether the house-ruins found by V. C. FREDERIKSEN<sup>2</sup> at Holsteinsborg really originate from the pear-shaped house type (trefoil houses, as FREDERIKSEN calls them). I could imagine that in reality they were of some more modern house type.

The mentioned type of house which ought rather to be called the Eskimo winter tent or "earth-tent" than the dome-shaped type consequently seems to have a very sporadic distribution, which corresponds with the fact that it is an old form of dwelling which once had a greater distribution, but which is now superseded by other types of houses. In Alaska and at the Mackenzie, as also eastwards and especially in Greenland, it has been superseded by forms of houses which originally have come from Asia. In the districts of the Central Archipelago it is the snow house which has won.

The snow house, the most characteristic form of dwelling of the Eskimo culture, must in its origin, however, be apprehended as being brother to the winter-tent. Even MURDOCH<sup>3</sup> expressed the opinion that in all probability the bee-hive-shaped snow house must be regarded as succeeding the tent. In 1905<sup>4</sup> I tried to show that the snow house must have developed from the dome-shaped tent, as for winter use this was covered with snow, as it still is with the northern Indian tribes. But besides the dome-shaped tent there is still one form of house which possibly may have played a rôle as a precursor, and at any rate is a kind of parallel to the snow house. It is the round house which is dug into the earth and is partly built of turf, and which occurs in North

<sup>1</sup> M. o. G., Vol. 53, pp. 9 sqq.

<sup>2</sup> FREDERIKSEN, pp. 391 sqq.

<sup>3</sup> MURDOCH, II, p. 127.

<sup>4</sup> STEENSBY, I, p. 191.

America: on the prairie for example. It has not been possible to transfer such an earth-house to the tundra and the coasts of the Archipelago without more ado, and this for several reasons, of which the most important is the loose consistency of the soil compared with the solid sods of the prairie<sup>1</sup>. Added to this is the great scarcity of wood, and, also, the fact that the ground is almost always frozen and impenetrable. On the prairie it is possible to raise a mound of turf, but this cannot be done on the coast of the Arctic Ocean. There the soil can only be used to cover a sloping surface, where it can lie firmly. If one wishes to have a firmer mound, or wall, it must be of stone, or at any rate must have a firm core of stone.

But then, on the other hand, there is the snow, which on the tundra can take the place of the firm sod of the prairie. In reality the snow is an ideal material to use. One can easily dig out a round hollow in the snow, and with the snow build a wall round the hollow, in a similar way as one sets up a wall of turf round the hollow of the house on the prairie<sup>2</sup>. Nowadays the opening above is closed with a vault. Originally, of course, there must have been times when this was not known, so the snow house was covered with skins in a similar way as it still is towards spring, when there is a risk of the snow-vault melting and collapsing, a practice still in common not on the Alaskan coast south of Point Barrow through the winter.

I have tried also to correlate the snow house with the North American round earth-house, because, *inter alia*, a round earth-house and, besides this, the dome-shaped tent evidently represent a couple of the oldest forms of dwellings, not only in these districts, but also in Northern Asia. Probably they must both be reckoned as typical adjuncts to the oldest Palæasiatic-American culture in the northern regions with the cold winter.

In its oldest form, such as it must be supposed to have been here, the snow house; therefore, must be apprehended as a snow-tent — or a parallel with the earth-tent. Not until later — perhaps even relatively late — was the art of making an arch acquired. But, when this was acquired, the snow house gradually became so greatly improved that finally it was able almost entirely to supersede other forms of winter houses from the central districts.

How the art of building an arch was acquired is a difficult question. There are two possible explanations: either the Eskimo did not learn

<sup>1</sup> Cf. STEFANSSON, I, p. 346.

<sup>2</sup> A geographical condition must also be emphasized, which stipulates that it is on the tundra and the sea ice that the snow house has arisen, and not in the forest. The fact of the matter is that in the forest the snow falls evenly like a homogeneous but comparatively thin and loose layer. In the open districts north of the forest boundary, however, large masses of snow collect in places which is a contingency with the building of snow houses.

to build the arch until towards Bering Strait they came in contact with people with a higher and richer culture — the vault then would first be Neoeskimo — or else they themselves thought of closing their snow-tents at the top with an arch, whereby they could save themselves the trouble of carrying tent-skins on their sledges during rainy weather.

Which explanation is correct I shall not endeavour to decide with certainty. Personally I believe in the first explanation, viz., that the Eskimo have through long periods used snow houses closed at the top with skins, and that only relatively lately have they learnt to close it with an arch. If, however, contrary to expectation, the second explanation should prove to be the correct one, it is perhaps possible that those authors may be right who have advanced the theory "that the Eskimo might possibly have borrowed the idea of their dome-shaped snow houses from the snow-burrows of the seals on the ice."<sup>1</sup>

Quite apart from this problem, it ought to be evident from the preceding description that the three last mentioned forms of dwellings — the summer-tent, the earth-tent, and also the snow house — are Palæeskimo in their origin.

From the American Arctic Archipelago and with the Palæeskimo culture, which was purely Arctic in its character, they have spread as far eastward and westward as this culture was able to advance. This probably means right up to the north coast of Bering Sea in the west, and to Labrador and the Arctic parts of Greenland in the east.

Summer-tent and snow house have been able to hold their own; but instead of the earth-tent improved forms have appeared in most places, the so-called Neoeskimo group of houses, the origin of which is due to Asiatic influence.

How these two groups have influenced each other is a problem in itself. Thus when houses of the Point Barrow type get their window moved down from the side of the roof so that it begins immediately above the lowermost end of the house passage, while a little air hole in the side of the roof remains as a kind of rudimentary window, this is without doubt borrowed direct from the Eskimo "winter-tent" or Eskimo "earth-tent."

The idea of a house sunk in a hollow and covered with earth is older than the origin of the Palæeskimo culture. The same applies, no doubt, to the employment of a simple, earth covered house passage. On the other hand the arrangement of the house passage which is now mostly used, and whereby one enters the house from below, is no doubt of later origin.

It probably originates from Asia, and has then passed from the Neoeskimo group of houses into the Palæeskimo form. As an example

<sup>1</sup> THALBITZER, M. o. G., Vol. 39. p. 363; the idea, however, has also been advanced by other authors.

I shall mention that according to KNUD RASMUSSEN<sup>1</sup> it was from the Pond-Inlet Eskimo who immigrated in the early sixties that the Polar Eskimo at Smith Sound first learnt to build snow houses with a long passage and an entrance from below. Before then snow houses were built, but the passage was shorter, and it was not understood how to give the house an entrance from below, and this in spite of the fact that such an entrance was used even in the pear-shaped winter houses.

One might also ask what the conditions were with other features common to the different types of Eskimo houses, as, for instance the platform and the blubber lamp. As concerns the latter, there can be no doubt that HOUGH is right in saying that from the very beginning it was a necessity for the Eskimo directly they left the forest. The lamp must, no doubt, be Palæeskimo; still it is scarcely an Eskimo invention, but lamps were no doubt used even as early as the days of the Palæ-asiatic-American earth-houses. And very likely something similar applies to the platforms, even if there may naturally be reason to assume that, owing to the Neoeskimo adopting Asiatic culture elements, both the lamp and the arrangement of the platform have been subjected to essential improvements.

Still one more result must be emphasized as being evident from this description of the types of Eskimo dwellings, and that is that one cannot imagine this distribution of the rectangular houses of the Neoeskimo group from West Alaska to the shores of the Atlantic eastwards, without a spreading, or if one prefers it a migration, of people having taken place. For us, one of the most important results of this investigation of house types is the fact that Neoeskimo migrations from west to east must have taken place.

Whether these took place at one time and wholly, or at broken intervals, is at present a minor question. But on the other hand I must at once draw attention to the essential difference which exists between the nature of these Neoeskimo migrations and the nature of that older migration undertaken by the Palæeskimo when they dispersed from the Archipelago. The migration of the Palæeskimo must have been of rather slow growth, and over regions unknown, the habitable advantages of which could be understood only by degrees. The Neoeskimo, on the other hand, migrated backwards so to speak, along trodden paths; they represent, originally, a surplus Alaskan population which, with its higher technical culture, was able to turn the old regions to account in a more intensive manner. Probably the Neoeskimo migration does not represent one wave of immigrants but more, some of which must have reached the remotest districts of Greenland and Labrador. Another problem is if these migrations as a rule resulted in a close amalgamation of the Palæeskimo and the Neoeskimo before new advan-

<sup>1</sup> KNUD RASMUSSEN, *Nye Mennesker*, p. 31.

ces took place, or if the Neoeskimo waves generally rolled onwards depending only on the geographical conditions.

With regard to the types of Eskimo houses the result of this examination is then, that a Palæeskimo and a Neoeskimo group of dwellings can be pointed out.

The Palæeskimo group is the summer-tent, the so called earth-tent and the snow house. Of this the summer-tent and the snow house have kept their position, while the earth-tent is on the point of disappearing.

The Neoeskimo group consists of the forms of rectangular houses including the pear-shaped house derived from this; and further the so called Mackenzie-type; and lastly the pile-building and some few other, in this connection more insignificant, house forms from Alaska.

## Theory on the Development of the Eskimo Culture.

I have now given in the preceding chapters firstly a more extensive anthropogeographical study of the various nuances of the Eskimo culture, nextly a smaller anthropogeographical summary of the adjacent forms of economic culture, and finally an ethnographical synopsis of the forms of Eskimo dwellings.

Amongst the results of these investigations may be emphasized the demonstration of the point that two principal groups of elements occur in the economic culture of the Eskimo — an older group — the Palæeskimo — which may be explained as a geographical product of adaptation, which in all probability issued from the regions between the Arctic Archipelago and the coast of the mainland — and a younger group, which is due to influence and borrowings from without, and must especially have been adopted and fashioned in the regions at Bering Strait — this is mentioned as the Neoeskimo.

The investigation of the forms of dwellings plainly confirmed this distinction between the two layers of culture, and furthermore bore testimony to the fact that there must have been extensive Eskimo wanderings corresponding with each of these layers.

For safety's sake I wish to emphasize that with these sections I consider that I have finished the essential scientific investigations which I wish to advance. On the basis of the results attained, I intend in the following pages to try to outline a more elaborate theory of how, in my opinion, one must regard the probable process of the origin and development of the Eskimo culture on a large scale (compare the map).

### The Continental Area of the Pre-Eskimo.

The oldest native seat to which with any probability at all one can trace back the Eskimo is the region between Barren Grounds and the northern part of the prairie. One must assume that at a certain period the Eskimo must have lived here, and have utilized the natural resources of the country by hunting and fishing in a like manner as the later Indian inhabitants did.

Over how large an area these pre-Eskimo have lived — whether they have also occupied the northern parts of the prairie, and to how great an extent they originally, in addition, extended on to the tundra — nothing can be decided: not on an anthropogeographical basis at any rate.

These original Eskimo spoke a language which was the mother-tongue of the present Eskimo language; but for the rest they have been more "Indian" than "Eskimo" in culture. By this is only meant North American, i. e., continental; because one cannot assume that, from an ethnographical point of view, their previous history has been extensively American; even at this early stage one is obliged to reckon with Asiatic influences, probably Asiatic immigrations, which have brought certain fundamental Palæasiatic-American possessions of culture, such as, probably, bark-boats, snow-shoes, earth-house, oldest tight fitting skin clothes, etc. But to what extent the mentioned pre-Eskimo inland culture has been American, and to what extent Asiatic elements have been present cannot be inquired into in this connection.

### The Rise of the Palæeskimo Culture in the Archipelago by New Adaptation.

In the preceding pages the Palæeskimo culture is explained as an originally North Indian form of culture of which the winter side has been specially developed by adaptation to the winter ice of the Arctic Ocean.

It must be assumed that the above mentioned pre-Eskimo inhabitants of the interior gradually moved beyond the tundra, and especially onto the Barren Ground<sup>1</sup> area, in that they exchanged their forest hunting and bison hunting for the hunting of the reindeer and musk ox of the tundra. The original wintering in the forest had by degrees to be abandoned — by some of the groups at any rate — on account of the distances. Wood as fuel had then to be replaced by fat and tallow, and bark as a covering for boats by skin. Here one must not think of new inventions. The things which circumstances forced into prominence were well known matters. In the northern part of the prairie the boats have up to present times been covered with bison skin, and fish-oil was occasionally employed as fuel by Indian tribes.

The essential impulse to the development of the Eskimo culture did not come until the Eskimo accustomed themselves to stay at or on the sea ice in the winter and hunt seals. To a hunting people, which lived by following the migrations of the herds of animals, this transition had

<sup>1</sup> It must be noticed that by Barren Grounds I here in a particular sense mean the peninsula-resembling domain northwest of Hudson Bay and east of the Coppermine River.

to be a necessary result of the mode of living and the anthropogeographical conditions. The following of the migrations of the herds of animals had necessarily to lead the Eskimo to the sea coast and out across the sea ice.

As was pointed out in the preceding pages, one must presume that this, the rise of the Palæeskimo culture through geographical new adaptation, took place in the Arctic Archipelago or, more correctly, at the coasts and indentations between the continent and the islands, which means, firstly, along the district from Coronation Gulf to the Melville Peninsula. It is reasonable to suppose that again, among these areas, on account of its position, it was Coronation Gulf, or rather the regions between the continent and Victoria Land which were first reached by the Eskimo and which played a principal rôle in the new adaptation.

It might be asked whether the pre-Eskimo advance towards the north, to the tundra and the Archipelago, took place voluntarily or was due to pressure from southern neighbours. One will probably never be able to decide the question. But here it is to be strongly emphasized that life at the Arctic sea coast, far from indicating a step backwards, in reality indicated a step forward as regards economy, inasmuch as, in addition to the hunting of terrestrial mammals and summer fishing in the fresh waters which was already known, the practice of hunting aquatic mammals was acquired as compensation for the ice fishing on lakes and streams. The contrast between this fishing on the ice of lakes, which was only resorted to in times of need, and the sea ice hunting of seals gives a kind of standard of progress. One can then very well imagine that no pressure has been necessary, but that the pre-Eskimo have been tempted out to the coasts of the Arctic Ocean by natural conditions.

When the Palæeskimo culture had once been formed it naturally spread spontaneously west, east and north along coasts and coast waters, across the districts which offered the geographical conditions which it required, and to which especially pertained smooth winter ice with seals and the occurrence of musk ox and reindeer, or at any rate one of these two hunting animals in abundance.

This Palæeskimo distribution must have taken place evenly, or must have developed by degrees as a slow growth across the countries. Only small groups of a few families have by degrees ventured further and further away. As regards their nature even these Palæeskimo migrations must correspond with the later wanderings which I have mentioned elsewhere<sup>1</sup>, and with regard to which I pointed out that they must specially have been connected with the domains where the musk ox has or had its distribution.

It must be assumed that even the Palæeskimo must have made

<sup>1</sup> M. o. G., Vol. 34.

use of the "musk ox route" to Greenland. It is naturally difficult to express any opinion as to whether they have reached out along the coasts of Greenland and along the Arctic coasts of North America both in the direction of Labrador and in the direction of Alaska. Anthropogeographically considered, however, it is most natural to assume that the Palæeskimo have to all sides reached as far out as the Arctic Eskimo culture occurs at the present date.

With regard to the migration routes in the Archipelago itself, I must state that I am inclined to believe that the main route from the coast of the continent to the islands at the northwest coast of Greenland (Ellesmere Land and others) has not gone from Boothia Felix Peninsula direct towards the north, but that the route has more frequently gone from Coronation Gulf along the south-west coast of Victoria Land to Prince of Wales Strait; further through this and across Banks Strait to the south coast of Melville Island, and thence along the south coast of Parry Islands and between these islands to Ellesmere Land. The present apportionment of the population, the position of the deserted settlements, and the anthropogeographical conditions (the occurrence of winter ice and of musk oxen) speak in favour of this route as being particularly attractive and accessible (compare the map).

### **The Neoeskimo Culture a Result of Foreign Influence (acculturation).**

The Palæeskimo must be assumed to have been the first people to move into the here mentioned Arctic regions and to adapt their culture to an Arctic mode of living after these regions had been freed from the ice covering of diluvial times.

Like other northern cultures the Palæeskimo culture, has, however, also later been the subject of influence from more southern regions and cultures. But what especially happened with the Eskimo culture was that this influence quite particularly took place on the flank of the Eskimo territory of distribution, viz., in Alaska. While other northern domains of culture, of somewhat greater extent, received influence in places which were geographically different, this was not, or rather only in an inferior degree, the case with the Eskimo domain. Here the influence set in at one fixed part of the domain, namely in the districts at Bering Strait.

The character of the influence was indicated earlier and in the same way I also tried to decide its sources, a task which, however, offered special difficulties on account of our inferior knowledge of the ethnographical and the historical conditions in North-Eastern Asia. In the preceding pages I have endeavoured to give a summary of the sources for influence which necessarily must have been in activity.

Here, however, I will venture to educe one of these sources, which in my opinion must have been active in a special degree, without, however, my being able to state certain ethnographical, or even certain historical, proofs of such influence.

This particular and specially important influence which I suppose to have taken place is a direct influence from Japan through the Japanese navigation. Whether in ancient Japanese literature evidence is found of voyages so far north as the districts round Bering Strait I do not know. But I consider it most improbable that a highly seafaring people such as the Japanese were, right from the older middle ages to the beginning of the 17th century, should not also have extended their voyages to Bering Strait, where they could carry on fishing, whale hunting and hunting of walrus, and trade such important products as blubber, ivory, and furs.

One sees that the Japanese extended their sea voyages still further in a southern direction. On account of their nautical skill the Japanese were known in the waters of the East as "Kings of the Sea" as F. BRINKLEY<sup>1</sup> expresses himself. But between the years 1614 and 1641 this navigation was destroyed, especially by the Shogun Iyeyasu. "He ordered that all vessels of sea-going capacity should be destroyed, and that no craft should thenceforth be built of sufficient size to venture beyond home waters."

In 1641 Japan was deprived of all craft which could go trading or whale hunting to the regions at Bering Strait. "Not a ship large enough to pass beyond the shadow of the coast may be built."

The Russian expeditions to the Pacific coast only occurred about a century after this period. According to Steller, with the inhabitants of the coast, the Kamchadales for example, they found knowledge of the Japanese, but naturally no direct evidence of this Japanese navigation which had ceased long before and had not been allowed to revive.

Of course the stated argumentation that the Japanese navigation reached the districts at Bering Strait is no proof that the Eskimo culture really was subjected to Japanese influence. Such proof might, I presume, be found in comparing the economic culture of the Eskimo with the economic possession of culture of the old fishermen and sailor population of Japan. It is only this class of the population which may be assumed to have influenced the Eskimo — on the other hand not the higher classes of Japan. But for this, material is still lacking, at any rate I have not access to such.

Meanwhile I can in one respect mention testimony which in a rather obvious and striking manner speaks in favour of the Eskimo having had connection with the Japanese, and that is the anthropological fact that the specially Japanese form of Mongol type so unmistakably occurs

<sup>1</sup> F. BRINKLEY. Vol. 3, p. 128.

with the Eskimo. Possibly it shows itself in the way in which certain Eskimo populations are stamped by it to a special degree. Thus, I myself have had the opportunity to observe this with the most unmixed Greenlanders on the middlemost part of the west coast (the extreme islands in the districts of Egedesminde and Godhavn).

The fact, however, was long ago observed by several others from different districts, and on the basis of anthropological investigations in Greenland it was first pointed out by the Danish anthropologist, SØREN HANSEN<sup>1</sup>.

My intention is, then, to heed that the most pure Eskimo in Greenland south of Melville Bay, or rather, perhaps, south of the district of Upernivik have a somewhat more "Mongolian" and particularly a more "Japanese" stamp than the Polar Eskimo. These latter made a more "Indian" impression on me, and seemed to remind me strongly of the Eskimo from the Netchillik domain, illustrated by Amundsen. Further west, in Alaska, the Mongolian stamp again seems to be more strongly predominant.

It was by studying the outer structure of the body and specially the proportions of the body that SØREN HANSEN arrived at the mentioned result that the Eskimo were connected with the Japanese. It must be mentioned, however, that CARL M. FÜRST and FR. C. C. HANSEN in their great work "Crania Groenlandica" have not been able, on the basis of their craniological material, to demonstrate such a specific connection. On the other hand they have arrived at the result which is not uninteresting to us, "that the Greenland Eskimo cranium is not a cranium of a primitive race, but rather that a part of its marked anthropological characters are secondary, developed as adaptational phenomena in a definite specific functional direction."<sup>2</sup>

I have adduced an historical and an anthropological argument for the fact that Japanese navigation must have reached the Eskimo regions at Bering Strait. Whether absolutely certain proofs can be produced at all, especially at the present moment, is, I think, doubtful. Linguistic proofs can hardly be expected; but one must set one's hope on the ethnographical ones, as previously mentioned, and also on the archæological ones<sup>3</sup>.

At the present moment my theory as to the influence of Japanese navigation on the Eskimo is, therefore, only a hypothesis. But yet I regard the probability as being so great that I do not hesitate to advance it.

I assume, then, that the Palæeskimo culture in the regions at Bering

<sup>1</sup> SØREN HANSEN, I, p. 194.

<sup>2</sup> FÜRST and HANSEN, p. 225.

<sup>3</sup> It may be mentioned that the idea of Japanese blood being present in the Eskimo is very strongly advocated by A. HAMBERG in his mentioned work.

Strait has been exposed to various cultural influences from without, but that perhaps the most important source of these influences has been the Japanese navigation which probably first reached the mentioned regions well within the centuries of our era, and probably lasted until the beginning of the 17th century. Here, or probably along practically the entire west coast of Alaska — possibly right up to Point Barrow — the Japanese are thought to have carried on whale hunting and trading, they have set up their booths ashore, and have taken the Eskimo coast inhabitants into their service, collaterally with carrying on trade with them.

The result was a mixed race and the Neoeskimo hybrid culture. Hereby must be understood an economic hybrid culture. The Japanese who went to the coast of Alaska have hardly imparted, or have hardly been able to impart, cultural elements of a higher nature. If linguistic matter has been adopted it has certainly taken place in an extremely small degree. The conditions have probably been to some extent parallel to those which we know of in Danish Greenland. In spite of 200 years of missionary work the influence of the Danish language is extremely slight, and the spiritual influence hardly goes beyond purely religious conditions and ideas. If one imagines the Danes to have carried on trade and navigation in Greenland without their being missionaries, one has a parallel to how, as I think, Japanese navigation has influenced the Palæskimo round Bering Strait, and refashioned them into what I have called Neoeskimo, but which might also, perhaps, be called Mongol-Eskimo. (By the way, the relations between these and the Palæskimo no doubt correspond somewhat as regards anthropology to the relations between the tribes in North East Asia, for example the Tungooses, who are so strongly stamped by the distinctive Mongol type, and the so called Palæasiatics).

In the mentioned case we would in Danish Greenland have had a Danish-Eskimo hybrid race with an economic culture which had not adopted any great number of essentially Danish or European implements and methods of use, but which, on the other hand, had in several respects allowed itself to be influenced by, or to adopt, some elements for the improvement of their own culture and technique. But if the connection ceased one would at once hardly be able to trace the former presence of Danish influence on language and thought, and after a few generations the memory of this influence would also have disappeared or have been enveloped in obscure legends.

Likewise in Alaska with the Japanese. These can be supposed to have left behind distinct evidence only in the race-character and in the economic culture. On the economic side of the culture the whale hunting and what pertains to it is probably especially in question. Regarding the house structure, it is possible that the rectangular house (the Point Barrow type) arose direct as a borrowing from the Japanese, in that

these erected their booths in a rectangular form like buildings in Japan — but of course this whole idea is only a conjecture. For the rest it is the Eskimo language and way of thinking, the Eskimo dress, and also the Eskimo mode of living in its entirety which has maintained itself in the face of the foreign culture and stamped the new culture with a decidedly Eskimo character.

For the rest I wish to emphasize the fact that I do not assume the Eskimo to have adopted any great number of essential Japanese implements and methods of use. As regards culture, the influence has had more of an inciting character, collaterally with the taking place of interbreeding. Possibly, however, the traces of relatively high technique which one encounters with the western Eskimo, i. e., weaving and pottery, are possibly to be apprehended as originating from the Japanese<sup>1</sup>. The Eskimo metal technique has possibly the same origin. The most common conception is certainly that the Eskimo, when from the North they had reached down to the regions south of the mouth of the Yukon, learnt both weaving and pottery from the North-West Indians; but I am inclined to believe that both Eskimo and North-West Indians have adopted these accomplishments from Asia; that is directly or indirectly from Japan, or perhaps other East Asiatic culture lands.

I have already expressed the view that several possessions of culture of Palæeskimo origin first received their final fashioning in the regions round Bering Strait and under Neoeskimo conditions of culture. Amongst other things I have mentioned that possibly only here in this region has the kayak attained the double paddle and that here, also, an improved form of the dog sledge probably was adopted. None of these improvements, and especially not the last mentioned, can, however, be supposed to have originated from the Japanese, and I state the point in order to emphasize the fact that it must not be supposed that it was only the Japanese sailors who influenced the Eskimo in the Bering territory.

What I suppose to be the case is, that the so-called Neoeskimo culture and population originated around Bering Strait through the influence of various neighbouring peoples, especially of the so-called Pacific Asiatics, and that amongst these latter it is the Japanese seafarers and fishermen who have played the most inciting and refashioning rôle, even if, perhaps, they have not yielded the greatest direct contribution to the improvement of the Neoeskimo technique.

Naturally it ought not to be forgotten that the Eskimo have received some influence from American neighbours, but the really essential in-

<sup>1</sup> With regard to weaving at Point Barrow the reader is referred to MURDOCH I, p. 316. STEFANSSON has lately found most peculiar traces of an old Eskimo pottery as far east as Langton Bay, east of the mouth of the Mackenzie. STEFANSSON, I, pp. 327 sqq.

fluence has come from Asia. How great an extent the supposed acculturation territory, or the domain of direct influence, has had is a great question in itself, which at the present moment cannot possibly be solved.

From this domain the Eskimo culture in its improved and enriched form then extended partly to South Alaska as Subarctic Eskimo culture and partly in a northerly and easterly direction along the coast of the Arctic Ocean along the old Palæskimo paths of distribution, where it had to emphasize the Arctic sides of the economic culture, whereby it had occasion to improve and enrich the Palæskimo culture. In a Subarctic direction, to be sure, an increased impetus together with occupation of new land has taken place on this occasion, but apart from this the Neoeskimo have no doubt only followed old roads, inasmuch as the Palæskimo probably already had occupied, or at any rate visited, all the districts which might harbour an Arctic Eskimo culture. As already stated, the Neoeskimo had easier conditions for their migrations, because they wandered back along known routes. Added to this is, that they had a richer and better economic culture, and also that they no doubt were considerably more numerous. For these reasons one dare assume that their advance took place somewhat quicker than that of the Palæskimo<sup>1</sup>.

When these migrations of the Neoeskimo commenced, how long they lasted, and how many surges started from Alaska, are all questions which cannot be answered with any certainty. A little consideration, however, seems to show us that the Neoeskimo migrations can only have taken place within a fixed and rather limited period. When these migrations began the weak Palæskimo populations along the north-coast of America and the Archipelago could scarcely have formed any barrier to them. Such a barrier was formed, however, as soon as more powerful and numerous Neoeskimo populations arose which were able to preserve their hunting-districts against invaders. Then there was again equilibrium amongst the Eskimo groups, and

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<sup>1</sup> Possibly there are some domains round which the Neoeskimo surge of people has passed. I could imagine this being the case at Southampton Island in Hudson Bay. The peculiar, old fashioned Eskimo culture of this island should therefore be of relatively uninfluenced Palæskimo origin. On the other hand there are matters which indicate that the neighbouring Melville Eskimo are more influenced from the Bering regions than is the case with most of the other central Eskimo; possibly this has some connection with the walrus and whale hunting at the Melville Peninsula. For the rest the Neoeskimo influence in the central districts of the Archipelago seems to have been relatively smaller both as regards culture and anthropology, probably because the Neoeskimo form of economic culture was badly suited to this region. The Neoeskimo from Alaska were whale hunters besides being seal hunters, and the access to whale hunting which is lacking in the central Archipelago probably brought about their wandering, for preference, to more eastern regions, to which they were allured by the access to whale hunting.

the big migrations had to cease, in any case, for a time. This consideration, however, is quite theoretical; we have no definite observations or facts to support it.

Some day, however, a more exact knowledge of the history of East Asia and of Eskimo ethnology and archeology may possibly enable us to decide the moment when the Neoeskimo migrations began. For the present I must assume that Japanese navigation can only have reached Bering Strait about some centuries within our era. The expeditions to Korea which were so inciting for the development of Japan's own culture took place about two centuries after the birth of Christ, and it is probable, I think, that, furthermore, long periods — possibly centuries — passed without Japanese ships reaching Bering Strait and the west coast of Alaska, and some time again before the Neoeskimo culture and population became developed under the effect of this and other influences. We then easily arrive in the second half of the first millenium.

### Palæeskimo and Neoeskimo Immigration in Greenland.

One of the few ways in which at the present moment one is able to form any idea as to the period when the Neoeskimo migrations came from Alaska is by trying whether, perhaps, one can draw some conclusions from the history of the old Scandinavians in Greenland, and from their concurrence with the Eskimo.

It is well known that the Scandinavians, as early as the end of the 10th century, found that Eskimo had been travelling along the south-west coast of Greenland. They did not find human beings however, but only remains of their houses and implements. It appears, however, that after this the Scandinavians occasionally met small groups of Eskimo on the south-east coast of Greenland<sup>1</sup>.

In 1266 the Scandinavians met Eskimo on the west coast, north of the "Vesterbygd," and in the following century first the "Vesterbygd" and then the "Eysterbygd" were destroyed by obtruding Eskimo.

Thus it was most natural to assume, as also was generally done, that the Eskimo had come from the north along the west coast of Greenland. Schultz Lorentzen was the first, however, to propound the view that the Eskimo in the southern part of the west coast of Greenland had come from the east coast, south round Cape Farewell. Now THALBITZER<sup>2</sup> has lately subjected the Eskimo myth material containing reminiscences of the old Scandinavians to a methodical investigation, and, as it seems to me, in a convincing way proved that the old Scandinavian "Vesterbygd" in the present district of Godthaab must have

<sup>1</sup> Compare the description of THALBITZER in M. o. G. Vol. 39, p. 691.

<sup>2</sup> M. o. G. Vol. 39, pp. 691 sqq.

been destroyed by Eskimo crowds coming from the north, while the "Eysterbygd" in the present district of Julianehaab was overwhelmed by crowds which came from the east coast.

Admitting the correctness of this as well as of my stated views, there can be no doubt that these Eskimo crowds which advanced both from the north and from the east represent Neoeskimo. The previously found traces of small Eskimo groups might perhaps, on the other hand, be ascribed to Palæeskimo; or they might possibly even be due to Neoeskimo hordes of pioneers.

Yet it seems to me most doubtful whether Palæeskimo can have penetrated down into the Subarctic regions in South Greenland. On the other hand they have no doubt existed on the northern part of the west coast in the district of the present Polar Eskimo and from Melville Bay some further south; the old settlements from the stone age in the interior parts of Disco Bay probably also go back to Palæeskimo times. Likewise it occurs to me that the conditions found in the northern part of the east coast of Greenland by the Danmark Expedition bear witness to the fact that the north east coast was first inhabited by Palæeskimo, and that later, and after a good while had elapsed since the first settlement which was probably extinct, a new settlement of immigrating crowds of Neoeskimo grew up.

The observations made by the ethnographer of the Danmark Expedition, CHR. BENDIX THOSTRUP<sup>1</sup>, on the basis of the condition of the objects of culture and specially on the basis of the condition of the remains of houses speak decidedly in favour of this view. I will quote his observations. "We can distinguish between three different periods of settlement. Between the oldest and the second period, to judge from the ruins, there has been a long stretch of time—several hundred years! But between the second-last and the latest period the difference in age has not been nearly so great." Later he declares that the Eskimo of the third settlement (or third immigration) "can hardly be said to represent an independent, new immigration, because they only include a couple of families."

We have therefore — it seems — in reality two different immigrations to the north-east coast of Greenland. They are distinctive in time, and they appear with a different stamp as regards economic culture. On land the oldest immigrants carried on musk-ox hunting on an extensive scale. The later immigrants have hunted the reindeer, and on the sea, besides seal hunting, they have also carried on whale hunting, which one can conclude partly from Thostrup's observations that they possessed umiaks and partly from the bones of whales and whalebone, and also from their apparatus being made of whalebone. The later immigrants built the small rectangular houses, whereas the

<sup>1</sup> THOSTRUP, pp. 335 sqq.

remains of the houses of the oldest immigrants were evidently so old and decayed that it does not seem as if it has been possible to make sure observations as to their manner and form of building.

One sees that the observations fit in with my theory of a distinction between Palæeskimo and Neoeskimo. I assume the first immigration to have consisted of Palæeskimo people with their Arctic economic culture still bearing a strong impress of the continent. The later immigration has consisted of Neoeskimo who have brought with them their whale hunting technique. The Palæeskimo have gone north of Greenland to the east coast. The Neoeskimo have probably gone both to the north and the south of the country. With their great mobility both at sea and on the ice they have not been so strongly tied to certain geographical localities as the Palæeskimo. Their wanderings have taken place more quickly, and they have resorted to places where there was good whale hunting. For this reason they have probably preferred the east coast to the west coast, and the northern part of the east coast to the southern part.

As to the point of time when this or these Neoeskimo immigrations took place — the immigration may have happened in several divisions though within a definite period — Thostrup was evidently inclined to fix the date too near to the present day. I do not think that — either on account of the condition of the ruins, or by taking into regard the former occurrence of the whales so far north — anything can prevent our assuming that C. THOSTRUP's so called second immigration (i. e., the Neoeskimo) may date from the time before and during the 10th—13th centuries A. D., or from the middle ages, to which period O. SOLBERG, for archæological reasons, dates the settlement on the north-east coast.

In this way we can see a connection between this settlement on the north-east coast of Greenland and the final immigration of the Eskimo to South Greenland and the subsequent annihilation of the "Eysterbygd." It is an idea already expressed by SOLBERG in his forementioned work<sup>1</sup>. "In einer oder anderer Weise muss die Besiedelung der entlegenen und für die Eskimo nicht sehr produktiven nordöstlichen Küste in Verbindung stehen mit den Völkerverschiebungen, die den Untergang der isländischen Kolonien verursachten."

It is of interest that THALBITZER<sup>2</sup> is opposed to this assumption and says that he "does not understand why SOLBERG is of opinion that the Eskimo colonization on the north-eastern coast of Greenland must necessarily stand in indirect connection with the destruction of the Scandinavian colony on the west coast, . . ." THALBITZER naturally thinks of the colonization on the north-east coast of Greenland in its

<sup>1</sup> SOLBERG, p. 56.

<sup>2</sup> M. o. G., Vol. 39, p. 698. Note 3.

entirety since its inception; but SOLBERG, who forms his opinion on the archæological material which he has had at his disposal, really only speaks about what I call the Neoeskimo colonization. The fact of the matter is, no doubt, what THOSTRUP<sup>1</sup> asserts, viz., that for various reasons "the objects brought home to museums by expeditions were almost exclusively of recent date." For this reason SOLBERG had to come to the conclusion that the settlement in North-east Greenland was of comparatively recent date, and to a certain extent was right in this, if one only remembers that a somewhat older colonization of a Palæeskimo nature preceded the colonization which he investigated and spoke about.

The Palæeskimo had a pure stone age culture. On the other hand the Neoeskimo hybrid culture had an East-Asiatic metal culture to build upon, and as the migrations took place comparatively quickly, the knowledge of the metals (copper and iron) carried along from the point of origin in West Alaska did not lapse from memory, so that it was possible to manufacture new implements of metal as soon as some happy opportunity gave access to such material.

This was the case with the native copper from the Coppermine River at Coronation Gulf, and likewise it was the case with the naturally occurring iron in Greenland, and also with the iron which possibly, even in the middle ages, was occasionally obtained from the wrecks of European ships on the east coast of Greenland. SOLBERG has proved that it is inconceivable that the Eskimo should have resorted to the employment of natural iron of bad quality if it were not that they had previously become acquainted with the qualities of wrought iron. But SOLBERG could not explain where the Eskimo had learnt the use of iron, or whence they could have had the form of their implements which they had to express in stone or bone influenced by a metal technique. It seems, however, that he was mostly inclined to assume that the knowledge was a borrowing from the old Scandinavians in Greenland. According to my theory the matter has another and more natural explanation.

Thus it seems that Greenland, even in a remote past — which probably means some few millenniums back — has through immigration from the Archipelago had an ancient population, viz., the, here, so called Palæeskimo. These people of the stone age with the pronounced Arctic Eskimo culture probably did not reach further south than, at the farthest, the innermost parts of Disco Bay on the west coast. How far south they went along the east coast, it is also difficult to decide. Here the Arctic conditions of nature extend somewhat further south, yet one can hardly imagine that the Palæeskimo reached south of the great indentations (Franz Joseph Land and Scoresby Sound). On the other hand according to THOSTRUP the house-ruins of the men-

<sup>1</sup> THOSTRUP, p. 338.

tioned group have not yet been observed further south than 75° N. Lat. on the east coast. The traces of Eskimo which were found on the southwest coast in the time of Eric the Red ought, then, to be accounted to the Neoeskimo<sup>1</sup> who went south round Greenland to the east coast, whither they were allured by the whale hunting, or where they possibly retired under the influence of the immigrating Scandinavians in South-western Greenland.

To this must be added the question of the consequential change in the climate. On the basis of investigations, the correctness of which I shall not try to decide, O. PETTERSON has recently propounded the view that Greenland, about 1000 A. D., for a period enjoyed better climatic conditions with a somewhat higher total temperature, without the masses of "Storis" along the east and south coasts such as are now known. This more favourable climate, then, benefited South Greenland; and the district round the Eysterbygd ought, then, particularly to have had a temperate climate. This mild period should have brought about the retirement of the Eskimo to more northern districts; but when in the 13th—14th centuries, the climate again deteriorated, the Eskimo advanced once more.

Whatever may have been the conditions of this, possibly, milder period and of the supposed cessation of the "Storis" during the first centuries of the Scandinavian colonization, I believe, in any case, that the Eskimo advances into South Greenland, and especially the great

<sup>1</sup> One is tempted to ask whether they were Palæeskimo or Neoeskimo, whom the Scandinavians met with on the American coast on their Vineland journey. The whole of this coincidence is so obscure, however, that one is wise in not dragging it into the investigation. To this must be added that, from a literary point of view, the report has possibly been garbled by the admixture of irrelevant details, in that European incentive has possibly intermingled with the Saga poetry. As a result of America having been confounded with Western Europe such an admixture is supposed, for example, to be contained in Erik's Saga, where there is a report of the two Skrælings captured in Markland: "They declared, further, that another land lay on the other side right opposite their own where the people were dressed in white clothes and carried poles, with small pieces of skin (?) attached to them, and shouted loudly." (The translation is from W. THALBITZER, Four Skræling words from Markland (Newfoundland) in the Saga of Erik the Red; Proceedings of the XVIIIth Internat. Congress of Americanists). I shall not express an opinion about what must really be understood by Markland, or whether — provided the mentioned Skrælings really were Eskimo — one can find people within the sphere of contact with the Eskimo to whom the strange description of the white clothes and the laps of skin on poles might possibly apply. The information from the Saga that the Skrælings came in a great quantity of boats — "row after row while from all the boats poles were swung," gives one the impression that they must have been Neoeskimo, as the description seems to fit in with kayak paddlers with double paddles, but, as stated, the problems are here too many and too difficult to allow of my doing more than to call attention to one or two of them.

advances in the 14th century, must be explained with a backward view to the special development in the economic culture of the Eskimo which had taken place in the districts round Bering Strait, and had gradually extended to more eastern regions. Several crowds of these Neoeskimo have possibly reached Greenland from the Archipelago. Some of them have gone round the northern point of Greenland and down along the east coast, while others have gone south across Melville Bay. Some even seem to have come right down to the southern point, and further north along the east coast, even before the Scandinavian colonization began. That there must have been a certain connection between the west and east coasts of Greenland seems to be evident from certain cultural congruities which, here, however, I shall not enter upon.

As, then, the Vesterbygd and Eysterbygd were colonized by the Scandinavians, the presence of these has surely at one time had the effect of restraining and stopping the Eskimo wanderings. But later on a certain connection was, possibly, established between the two peoples; at any rate the wanderings were reassumed. It seems to have happened as in the case of water which has been dammed up, in that it broke forth with renewed strength. The Eskimo advanced from north to south along both the west and the east coasts. Originally this advance was, no doubt, peaceful; but, as is well known, it led to hostilities, and, finally, to the destruction of the colonization of the Scandinavians. It is very difficult to say anything definite about what has been the real driving factor in the advances. One is probably correct in assuming that fresh Neoeskimo crowds immigrating into North-east and North-west Greenland started the movement.

From this presentment of the immigration of the Eskimo into Greenland one gets, in addition, an explanation of why the Eskimo type in the more southern districts of Greenland seems to be the most Mongolian. The explanation of the matter is, I think, that these Eskimo represent Alaskan Neoeskimo. But as the source of the Neoeskimo people in Alaska ceased to flow, or at least ceased to be the overwhelming influence, then it was again the Arctic Archipelago, or the region north of the Barren Ground Peninsula, which proved to be the most important centre for Eskimo culture, from where new cultural elements spread towards the east, the west, and the north-east, and whence new small groups of Eskimo wandered northwards to Greenland, along the musk-ox route. Some of these left the stamp of a more Indian type on the Polar Eskimo and the most northern West Greenlanders. Others went down along the east coast, and to them may probably be accounted the "third immigration" of the Danmark Expedition, as also the small group which in 1823 was met with on Clavering Island. Probably some of these groups have reached right down to Angmagsalik.

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## CONTENTS.

	Page
<b>Introductory Sections</b> . . . . .	41
The Eskimo Culture and Theories on its Origin . . . . .	41
Views of Investigations Before Us . . . . .	60
Some Geographical Observations on the Eskimo Domain . . . . .	64
<b>The Representative Types of the Economic Culture of the Eskimo</b> . . . . .	76
Baffin Land . . . . .	76
Labrador . . . . .	81
The Polar Eskimo . . . . .	84
Greenland South of Melville Bay . . . . .	87 ✓
The Eskimo of the Melville Peninsula . . . . .	99
Kinipetu . . . . .	106
The Eskimo around Netchillik . . . . .	108
The Eskimo at Coronation Gulf . . . . .	117
The Mackenzie Eskimo . . . . .	123
The Point Barrow Eskimo . . . . .	128
The Asiatic Eskimo . . . . .	132
The Islanders in Bering Strait . . . . .	137
The Yukon Eskimo . . . . .	138
The Kadiak Eskimo . . . . .	143
The Aleuts . . . . .	146
<b>A Comparison of the different Types of Eskimo Culture</b> . . . . .	152
The Eskimo Territory a Unity as regards Communication . . . . .	152
Geographical Adaptation and Pacific-Asiatic Influence . . . . .	153 ✓
Eskimo Summer and Winter Culture . . . . .	156 ✓
Is the Arctic or the Subarctic form of Culture the older . . . . .	159
The Home of the Eskimo Culture from an Anthropogeographical point of view . . . . .	167
From Continental Culture to Coast Culture . . . . .	169
A Palæeskimo and a Neoeskimo Layer of Culture . . . . .	169
<b>The Economic Cultures Adjoining the Eskimo Culture</b> . . . . .	172
<b>Types of Eskimo Dwellings</b> . . . . .	187
<b>Theory on the Development of Eskimo Culture</b> . . . . .	204
The Continental Area of the Pre-Eskimo . . . . .	204
The rise of the Palæeskimo Culture in the Archipelago by new-adaptation . . . . .	205 ✓
The Neoeskimo Culture a result of foreign influence (acculturation) . . . . .	207 ✓
Palæeskimo and Neoeskimo Immigration in Greenland . . . . .	213 ✓
<b>List of Literature</b> . . . . .	219

(A plate and a map at end of this paper.)

## EXPLANATION OF TABLE.

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Fig. 1. Ground plan and vertical section of winter house from Point Barrow (after MURDOCH).

- 2. Ground plan and vertical section of winter house of the Polar Eskimo (M. o. G., Vol. 34, pp. 312—13).
- 3. Ground plan and vertical section of reconstructed winter house from Scoresby Sound (after RYDER).
- 4. Vertical section of winter house from Angmagsalik (after G. HOLM).
- 5. Ground plan of winter house in the Mackenzie region (after MURDOCH).
- 6. Ground plan of house of the Gilyaks (after SCHRENK).

*a* pillar; *b* entrance; *c* house passage; *d* door; *e* platform; *f* corner innermost in the house, without platform; *g* fire place.

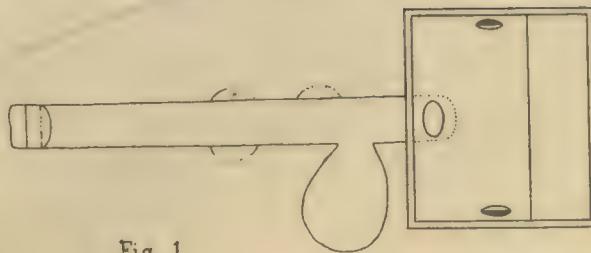


Fig. 1.

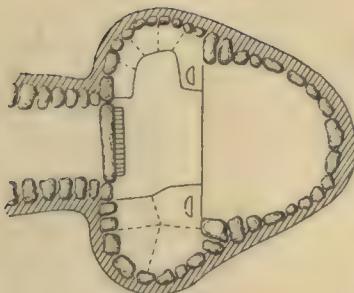
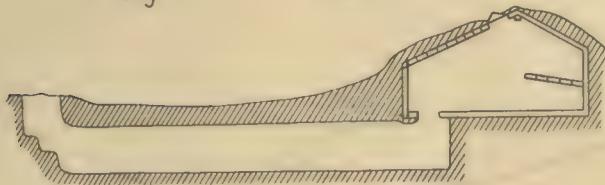


Fig. 2.

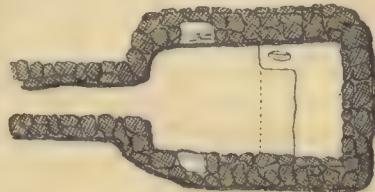


Fig. 3.

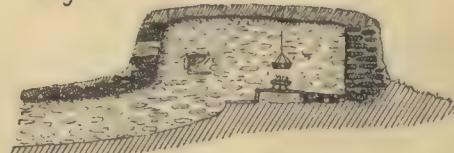


Fig. 4.

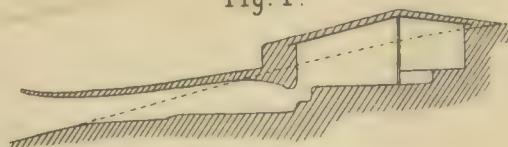


Fig. 5.

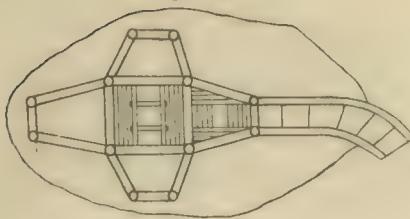
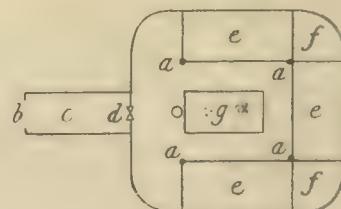
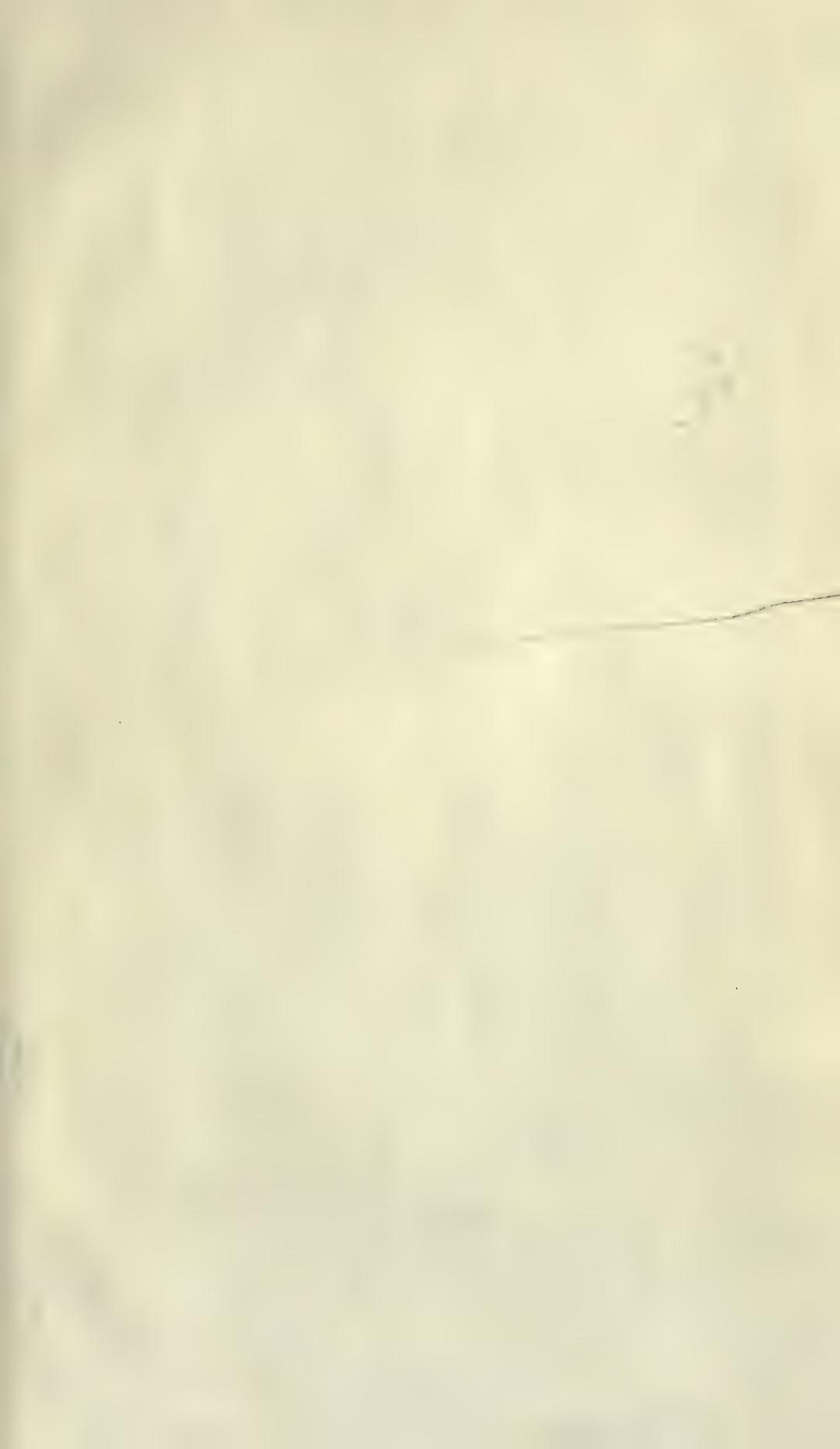


Fig. 6

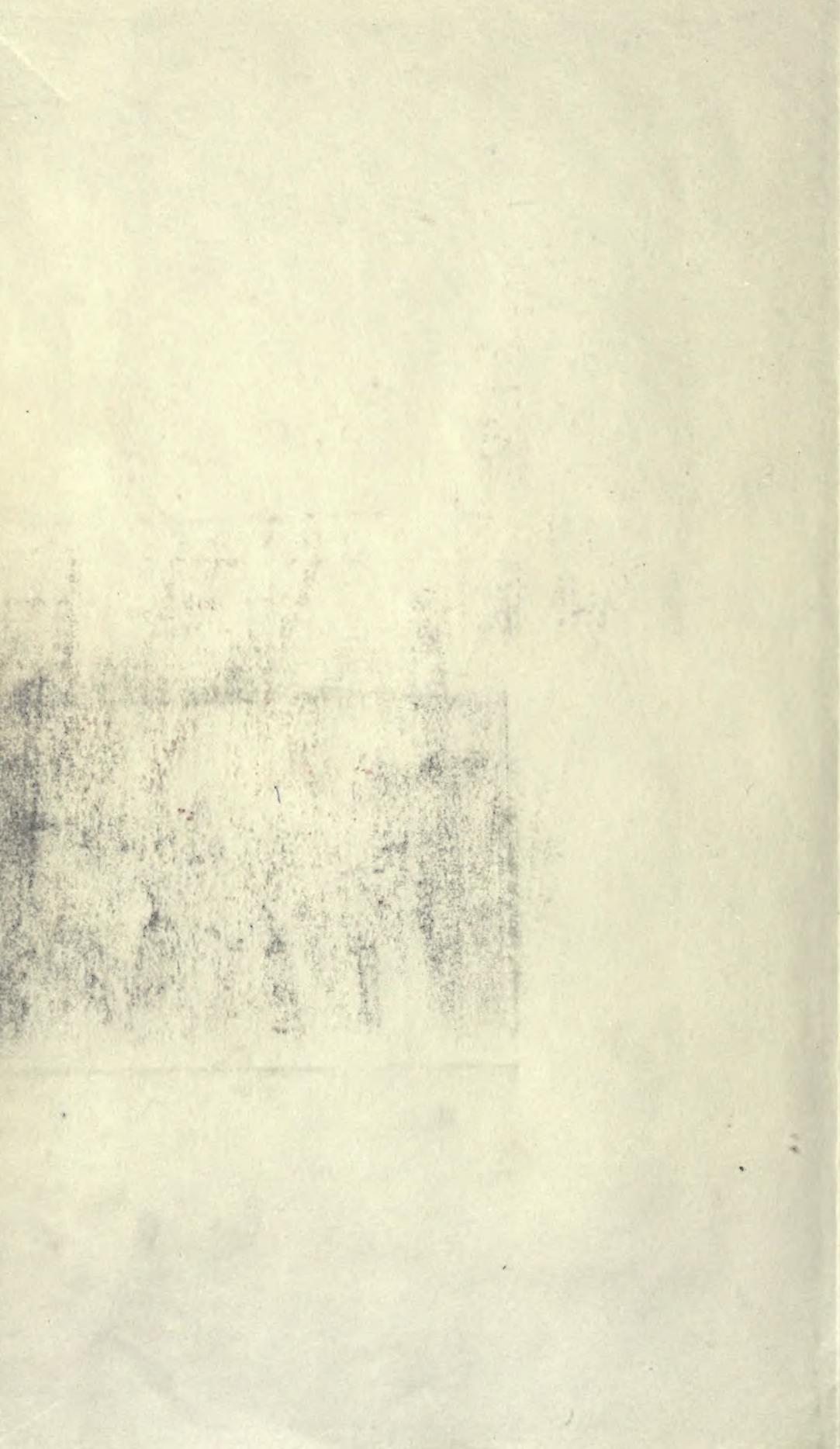












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